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Consultation

Technical annex to reviewing smart metering costs in the default tariff cap: May 2020 statutory consultation

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We are consulting on our review of the allowance in default tariff cap for the change in the efficient net costs to suppliers of the smart meter rollout since 2017.

This document is the technical annex to our main consultation document. Please see that document for details of our consultation, including how to respond.

Any enquiries related to the text of this publication should be sent to Ofgem at:
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Contents

Introduction

Function of this appendix

Our main consultation document sets out our proposals. This appendix provides additional detail on our approach to calculating suppliers' efficient net costs, going beyond the information presented in Chapter 5 of the main consultation document. It also provides further detail on our review of uncertainty, going beyond the information presented in Chapter 6 of the main consultation document.

The structure of this appendix is as follows.

- Chapter 1 explains why we propose to use the 2019 Cost Benefit Analysis (2019 CBA) as the starting point for our work.
- Chapter 2 sets out our general approach to modifying the 2019 CBA.
- Chapter 3 goes through our modifications to costs.
- Chapter 4 goes through our modifications to benefits.
- Chapter 5 provides additional detail on our review of uncertainty.

This appendix does not include specific questions. We welcome views on any of the issues discussed in this appendix.

1. The 2019 Cost-Benefit Analysis as a starting point

Section summary

We propose to use the 2019 Cost-Benefit Analysis as the starting point for our review of costs. We propose to amend it where an alternative approach would be more suitable for our purposes.

The 2019 Cost-Benefit Analysis

Overview of our approach

1.1. We propose to use the 2019 CBA as the starting point for our review of efficient net costs. This takes into account the quality of the 2019 CBA analysis. We propose to amend the 2019 CBA where an alternative approach would be more suitable for our purposes. We have not changed this position from the October 2019 consultation.[1]

Overview of suppliers' responses to the October 2019 consultation

1.2. Suppliers generally did not raise concerns with our proposed starting point. Several suppliers provided representations questioning the appropriateness of our methodology. This included our overall analytic approach – which took the 2019 CBA from the Department for Business, Energy and Industrial Strategy (BEIS) as a starting point and modified certain aspects of it as we considered appropriate.

Development of the 2019 CBA

1.3. We propose to use the 2019 CBA model as the starting point for our review of costs.

1.4. We consider the 2019 CBA to be a well-constructed and high quality analysis of the

[1] Ofgem (2019), Reviewing smart metering costs in the default tariff cap: October consultation. https://www.ofgem.gov.uk/publications-and-updates/reviewing-smart-metering-costs-default-tariff-cap-october-consultation

additional costs and benefits of the rollout.

- A team of five government analysts spent more than two years developing the 2019 CBA update. The analysis and construction of the model follows the latest best practice as set out in HM Treasury's (HMT) Green Book.[2]

- The 2019 CBA is designated a BEIS 'business critical' model. Accordingly, governance and assurance processes have been followed in accordance with best practice, as set out by the Macpherson review and as stipulated in internal BEIS guidance. BEIS's internal modelling integrity team quality assured the 2019 CBA model, awarding a final score of 94%, exceeding the minimum requirement for business-critical models and determined that the model was fit for purpose.

- Its analysis relies on historical data and evidence provided by energy suppliers or collected from other sources available to the Department. For the 2019 CBA, BEIS increased the quantity and quality of data it holds on the rollout as compared with the position in 2016.

- When forecasting future costs and benefits the 2019 CBA necessarily makes assumptions about how those costs and benefits might change over time. These assumptions have been set out and explained in the 2019 CBA document.[3]

- The CBA presents a central scenario and considers several sensitivities in its annex. These sensitivity tests responded to recommendations by the National Audit Office, after its review of the previous CBA.

Considerations – verifying inputs

1.5. One supplier considered that, as a matter of process, we could not have lawfully and diligently formed a conclusion on whether the 2019 CBA was appropriate to be used in

[2] HM Treasury (2019), The Green Book: appraisal and evaluation in central government (https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent)
[3] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019. https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019 Where relevant to this review, the assumptions transferred from the 2019 CBA can be seen in the SMNCC model we have disclosed. This allows the sensitivity of those assumptions to be tested and understood.

the way we proposed, as we had not verified and disclosed all inputs to the new 2019 CBA and their underlying assumptions.

1.6. We have considered these points, and we do not consider that it is necessary or realistic to verify each and every input in the 2019 CBA, nor are we required to so. As explained above, we consider the 2019 CBA was constructed to a high standard. For the October 2019 consultation, we reviewed the 2019 CBA's assumptions, bearing in mind the considerations we set out, including suitability to our purposes, materiality, and the feasibility of developing alternative approaches.

1.7. Comprehensive validation, including minor values, is unrealistic. In the context of formulating a cap which is required by legislation to be subject to six-monthly reviews and which is intended to protect consumers from paying inflated prices, we do not consider it reasonable to extend timelines to validate all minor values. Such an approach would be impracticable within the context and timescales of this exercise. It would negate the value of using the 2019 CBA as a starting point in the first place.

1.8. Comprehensive validation is also unnecessary. Suppliers were able to identify each input and value in the SMNCC model we disclosed in October 2019 and compare this to their own experience. Considering their knowledge of the market and their operations they could explain if they considered the SMNCC model values to be unrepresentative. Suppliers' responses to the October 2019 consultation demonstrate they were able to do this. We can then take account of the totality of responses as well as our understanding of the market.[4]

Different purposes

1.9. We consider that the high standard of the 2019 CBA does not mean that its estimates, on their own, are suitable for our review of efficient costs. In particular:

[4] For further detail on our response to suppliers' comments on disclosure, please see our January 2020 response to the October 2019 consultation.
Ofgem (2020), Smart metering allowance in the default tariff cap – Update and summary of responses to the October 2019 consultation, paragraph 3.22 to 3.34.
https://www.ofgem.gov.uk/system/files/docs/2020/01/smncc_update_and_response_to_the_october_2019_consultation_0.pdf

- **Relevant costs and benefits**: The 2019 CBA includes costs and benefits that are not relevant to our review (eg benefits to network companies) and excludes other costs and benefits that are relevant (eg transfers between suppliers and other industry parties).

- **Timing**: The 2019 CBA produces a central estimate of the total costs of the rollout for each calendar year up to 2034. The overall conclusions are less sensitive to the profile of those costs and benefits than our analysis. As we ultimately set an allowance in six-monthly intervals, and as our analysis covers a shorter period, we are more sensitive to the expected profile of net costs to suppliers.

- **Uncertainty**: In many cases the 2019 CBA estimates costs and benefits that have not occurred yet, or are difficult to estimate robustly. These estimates and forecasts are inherently uncertain. The appropriate treatment and assessment of uncertainty depends on the context. As our context (setting the cap to constrain suppliers' revenues) differs from the 2019 CBA, in some cases we propose to use different assumptions. This difference in our approach to uncertainty reflects our different purpose.

- **Counterfactual and additional costs**: It is crucial that the 2019 CBA, to achieve its purpose, distinguishes between counterfactual costs (that would have occurred without the smart meter programme) and additional costs (which are only incurred due to the rollout). Our review is less sensitive to this issue, as our ultimate aim is to assess the *change* in efficient costs since 2017. We therefore only need to consider counterfactual and additional costs in the period since 2017. The allocation of total operating costs in 2017 between additional costs and counterfactual costs does not affect the level of the cap (ie the total costs already allowed for are unaffected). Our different sensitivity to this issue means that in certain cases we can take different analytic approaches to the 2019 CBA.

1.10. As noted in Chapter 2 of the main consultation document, we consider that the 2019 CBA and our review need to be sufficiently robust for our purposes, and acknowledge that the estimates will include approximation and uncertainty. In our discussion of our methodology in this chapter, we describe where we consider estimates to be uncertain. In Chapter 6 of the main consultation document we review these instances of uncertainty in the analysis and consider its combined net impact. Where appropriate, we consider whether to make a holistic adjustment (in either direction) to address that uncertainty.

1.11. Some suppliers disagreed with our judgement on the level of precision that is required and the level of approximation that is acceptable. As one supplier illustratively put it, some circumstances require an egg-timer, whereas others require the additional precision of a stopwatch. In general, suppliers favoured a more precise approach than we judged to be practical or necessary. We have reviewed our judgements about precision and approximation to ensure they are appropriate. However, we note that it may not be possible (or necessary) to reach a consensus on the level of precision and additional work that is required or realistic.

2. Modifying the 2019 CBA

Section summary

We have set out criteria for where we propose to make modifications to the 2019 CBA. We focus on the costs and benefits which are relevant to suppliers. We specifically look at the impact on domestic customers with credit meters. We update the model with the latest data where possible.

Criteria for modifications

2.1. We propose to modify the cost and benefit calculations in the 2019 CBA where this is more appropriate for our purpose (which differs from the purpose of the 2019 CBA).

2.2. We propose to take the following factors into account when considering modifications:[5]

- **The robustness of the 2019 CBA and its underlying data**: As discussed in Chapter 1, we consider the 2019 CBA to be a well-constructed and high quality analysis of the additional costs and benefits of the rollout. We have reviewed whether these assumptions and data suit our purposes, and made modifications where they do not.

- **Coherence and consistency between assumptions:** Some assumptions stand alone; in principle, we can adjust them without expecting any impact on other costs or benefits. Other assumptions are interrelated; we should expect changes to have knock-on effects elsewhere in a supplier's costs or benefits. We consider whether isolated modifications improve or reduce the accuracy of our estimates *considering the overall impact,* compared with no adjustment.

[5] We originally set out these criteria in our April 2019 consultation.
Ofgem (2019), Reviewing smart metering costs in the default tariff cap, paragraph 3.15.
https://www.ofgem.gov.uk/system/files/docs/2019/04/review_of_smart_metering_costs_in_the_default_tariff_cap.pdf

- **Sensitivity of total costs to the assumption**: Not all costs, benefits, or assumptions have a significant impact on the SMNCC allowance. We prioritise areas where modifications would have a significant impact on the assessment of net costs.

- **Availability and practicality of an alternative data source:** Some assumptions have an inherent degree of uncertainty (for instance, forecasting how costs will develop in future). While it may be the case that some assumptions are uncertain, that does not necessarily mean an alternative approach would be more certain. Alternative data may not be available, may have different limitations, or it might be impractical or disproportionate to gather new data. In such circumstances, we proposed to consider whether simplified assumptions would be more practical. Where this is the case, we propose to consider what impact that remaining uncertainty has on estimated efficient net costs (which we do in Chapter 5).

Isolating relevant costs and benefits

Considering relevant costs and benefits

2.3. In our review, we seek to include only costs and benefits that affect suppliers. Table A1 (overleaf) shows the cost and benefit categories that we propose to include in the new SMNCC model.

2.4. We discuss the cost and benefit categories we propose to modify in Chapters 3 (costs) and 4 (benefits) below. We suggest that stakeholders read the published 2019 CBA alongside this consultation. For the avoidance of doubt, where we do not discuss modifications to a particular area, then we are satisfied that the approach taken in the 2019 CBA is sufficient for our purposes.[6]

2.5. The 2019 CBA includes costs and benefits that are not relevant to our review. This is because the 2019 CBA aims to quantify all the costs and benefits to the whole of society, so it includes the impact on consumers, suppliers, network operators, energy

[6] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019. https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019

producers and the environment. Many of those issues do not affect the costs an efficient supplier would incur and seek to recover in its tariffs.

Table A1: Cost and benefit categories in our review of smart metering costs

Cost categories	Benefit categories
In-premises costs • Installation of meters • Asset costs (smart meters, In-Home Displays) • Premature replacement charges (PRCs) and avoided rental charges in subsequent years*	**Avoided site visits** **Customer switching** **Inbound customer calls**
Suppliers' IT system costs • Amortised capital expenditure • Operating expenditure	**Debt handling** • Earlier identification of debt • Reduced bad debt handling
Other costs • Operating and maintenance • Communication hubs (SMETS1) • Disposal • Pavement reading inefficiency • Legal and organisational costs • Marketing (beyond Smart Energy GB)*	**Reduced theft** **Remote change of tariff**

Source: Ofgem. Note: Items with * are those which are not included in the 2019 CBA, but which we have included for the purpose of our analysis.

2.6. We have not included the costs and benefits that do not affect suppliers, or costs that are recovered in other areas of the cap (such as DCC costs, which we include in the pass-through SMNCC). The 2019 CBA sets out all of the costs and benefits it analyses. Stakeholders should consider their own activities rolling out smart meters and the 2019 CBA document to check we have not excluded relevant costs and benefits.[7]

2.7. The 2019 CBA does not include some costs and benefits that are relevant to our review. For instance, the 2019 CBA excludes or partially excludes categories where the impact on society nets to zero (examples include theft and losses, and tax). It also excludes categories that do not create additional costs *in the long term* above those that would have occurred anyway. For instance suppliers pay premature replacement charges (PRCs) when they remove some traditional meters, but without smart meters

[7] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019. https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019

they would have paid these costs over time through rental charges. We include the PRCs because concentrating the remaining costs of the meter in one payment is relevant to our review of the costs that occur during the life of cap.

Considering relevant customer segments

2.8. The 2019 CBA estimates costs for the whole of the market, not just those relevant to the part of the cap covered by this consultation (default tariff customers with credit meters). When estimating the efficient net costs of the smart meter rollout for customers with credit meters, we propose to exclude the costs and benefits relating to:

- non-domestic customers (ie businesses);
- customers on prepayment meter tariffs; and
- domestic customers on non-default tariffs.

Non-domestic customers

2.9. For most costs and benefits the 2019 CBA calculates costs for domestic customers and non-domestic customers separately. We include domestic costs only in our review and exclude costs relating to non-domestic customers (eg costs relating to advanced meters).

2.10. In some cases, the 2019 CBA calculates costs based on the whole supply business (not allocating these costs between domestic and non-domestic segments). In these cases we propose to estimate domestic costs per meter by dividing the total costs by the total number of meters (taking domestic and non-domestic meters together). This means that we assume that the cost per meter is the same for a domestic customer and a non-domestic customer. Given the difference in scale between domestic and some non-domestic customers, this may overstate the costs that we should apportion to domestic customers, making our estimate conservative. This issue applies to few categories within the 2019 CBA (supplier IT costs, organisational costs, and the benefit from reduced theft), so the impact is relatively limited.

Customers on prepayment meter tariffs

2.11. We propose to exclude customers with prepayment meters from our review of the net costs of smart metering for customers with credit meters. We discuss the costs of smart metering for prepayment customers in our separate consultation.[8]

2.12. As with the non-domestic point above, there are a few areas where the 2019 CBA calculates a cost across all domestic customers, rather than splitting costs between customers with credit meters and customers with prepayment meters. (For example, this applies to communications hub costs). Again, we propose to estimate the credit costs per meter by dividing the total domestic costs by the total domestic meters. This means we assume the cost per meter is the same for customers with credit and prepayment meters.

Customers on non-default tariffs

2.13. The cap applies to customers on default tariffs only. The 2019 CBA does not distinguish between default tariffs and non-default tariffs when assessing costs for customers with credit meters. We expect suppliers to recover the costs of installing smart meters from all of their customers, irrespective of whether they are on a default or non-default tariff; default customers should not pay for everyone.

2.14. To apportion costs and benefits we calculate costs and benefits per meter (ie we divide total costs for credit customers by the total number of credit meters). We make no distinction between default and non-default tariffs. The total cost or benefit for default tariff customers is this value per meter multiplied the number of meters on a default tariff.

2.15. Implicitly, we assume that the costs and benefits per default tariff customer are equivalent to those per non-default tariff customer. This is a simplification, which we consider appropriate. It is possible that costs differ between default and non-default tariff customers. For instance, if default tariff customers are less likely to arrange an installation date (because on average they might be less engaged than non-default

[8] Published alongside this consultation, and available on our website.

tariff customers), then suppliers may incur higher costs contacting these customers per installation arranged.

2.16. If there is a difference in costs, which is uncertain, it creates complexity and uncertainty. Suppliers' efficient costs could vary to the extent they have more or fewer default tariff customers than average. (The average should be neutral, due to the method of calculation). Installations may be disproportionately weighted toward default tariff customers in future, and may under represent them now. We do not consider it necessary to attempt to estimate or model these complexities. Rather we take them into account in our selection of the efficient benchmark from the range of observed costs and benefits, and our review of uncertainty and approximation in different aspects of the methodology (Chapter 6 of the main consultation document).

Default tariff customers without smart meters

2.17. We propose to spread costs and benefits across all default tariff credit customers. We do not propose to distinguish between default tariff customers with smart meters and those without smart meters. One stakeholder disagreed with this approach in response to the April 2019 consultation. It considered that, in principle, customers should not pay for a service (smart meters) where they have not yet received the benefit of that service; it suggested that only customers with smart meters should pay for the rollout.

2.18. We acknowledge the point. However, all customers should eventually receive a smart meter and benefit from the rollout. The nature of the rollout means that the costs precede the benefits. If suppliers only recover those initial costs from customers with smart meters, then customers may be less likely to have a smart meter installed (discouraged by a perceived penalty). This could slow down the rollout and harm customers in the long run.

Updating with latest Annual Supplier Return data

2.19. The 2019 CBA contains actual data up to and including 2018. This reflects the information available that was available to BEIS at the time.

2.20. We now have access to updated data from the 2019 Annual Supplier Returns (ASRs). These are data submissions by suppliers to BEIS. We have used this updated data in our revised SMNCC model. We discuss the specifics below, but in general:

- Where we have a profile of input data, we have added the 2019 data. This then also affects the projected values in future years.

- Where we have a single set of inputs, we have updated this to use the 2019 data. 2019 is closer to the middle of the life of the cap than the 2018 data previously used. It should therefore be a better reflection of the average situation during the life of the cap.

Considering rollout projections

2.21. The number of smart meters rolled out is a key driver of the costs and benefits that suppliers incur. Please see Chapter 4 of the main consultation document for our discussion of this topic.

3. Modifying costs

Section summary

We review the cost categories within the 2019 CBA, and consider where we need to make modifications for our purposes.

Profile of efficient costs

Overview of our approach

3.1. The 2019 CBA uses a time-weighted average as the input for many cost categories. In line with our proposal in the October 2019 consultation, for the most significant cost categories we use separate cost inputs for each year.

Overview of suppliers' responses to the October 2019 consultation

3.2. Suppliers did not comment on this in response to the October 2019 consultation.

Considerations

3.3. We have maintained our approach in this area, for the reasons set out below.

3.4. For many categories (including the largest cost categories – meter and installation costs) the 2019 CBA includes cost estimates for each year. The 2019 CBA calculates these in two steps. First, it starts with a single input value, based on suppliers' historical data (from the ASRs) and forecasts. This is a time-weighted average across years, with the weighting based on the proportion of meters installed in each year. Second, the 2019 CBA model applies cost uplifts to that single input value for each year. This is a reasonable approach for the purpose of the 2019 CBA, which looks across the duration of the smart meter rollout.

3.5. Our requirements differ. We set an allowance every six months, so we are more sensitive to suppliers' cost profile (on average). On that basis, for the most significant cost categories, we propose not to use a single time-weighted input to review the efficient costs of the rollout.

3.6. We propose to set an annual efficient cost profile, using separate cost inputs for each year. This largely[9] involves using the same data as the 2019 CBA. However, we propose to apply the relevant cost directly to each year. Using a cost profile better recognises that costs in the early stages of the rollout have been higher than future costs are expected to be.

Stating prices in real terms

Overview of our approach

3.7. The 2019 CBA model uses a GDP deflator to convert real to nominal figures (and vice versa). This is a figure taken from the HMT Green Book supplementary guidance. For future years, this series is based on information from the Office for Budget Responsibility.[10]

3.8. In line with our October 2019 consultation, we propose to maintain this approach.

Overview of suppliers' responses to the October 2019 consultation

3.9. One supplier said that it was inappropriate to use a non-market inflation measure.

Considerations

3.10. The issues are: whether it is appropriate to use a non-market inflation measure, and whether there is a discrepancy between using the GDP deflator for the SMNCC allowance, but indexing the operating cost allowance using the CPIH inflation measure.

3.11. We have maintained our approach in this area, for the reasons set out below.

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[9] The exception is where data is unavailable for a particular year – in particular at the start of the rollout. We will apply data from the nearest available year, whereas the CBA calculation would just include the time-weighted average.

[10] Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal. Table 19 of: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793632/data-tables-1-19.xlsx

Non-market rate

3.12. In response to the October 2019 consultation, one supplier told us that it was "*clearly* inappropriate to use non market rates in applying price control" (emphasis in original).

3.13. We have reviewed whether there is an alternative source available based on market information. The Bank of England's monetary policy report includes market-based inflation forecasts using the CPI inflation measure.[11] However, these figures are presented with a significant uncertainty range.

3.14. We do not consider that it is necessary to use market-based projections. We are using an official source in this area, and any forecast will be subject to uncertainty.

GDP deflator and CPIH

3.15. We have also considered whether there is a potential minor discrepancy between using a GDP deflator in this context, and using the CPIH inflation measure to update the operating cost allowance.

3.16. We do not consider that we should change our modelling approach.

- Smart metering costs from 2017 are included in the operating cost benchmark, and will therefore be indexed using CPIH anyway, alongside other operating costs.
- For new smart metering costs (eg the cost of installations in 2019), we have updated the model to incorporate new data from suppliers. Price changes will be reflected in the new input values we use.
- Any discrepancy therefore could only affect a proportion of smart metering costs, over a relatively short period since 2017.

[11] Bank of England (2020), Monetary policy report – January 2020, chart 1.5. https://www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2020/january/monetary-policy-report-january-2020.pdf

3.17. The Green Book GDP deflator series has not yet been updated with the actual values for 2019 and revised projections for future years. However, if this is published in time for us to feasibly take account of these before our decision, we intend to include the latest data in the SMNCC model and supporting models.

Installation costs

Overview of our approach

3.18. Installation costs are one of a supplier's principal costs in the rollout. These cover the costs of training installers, providing tools, installer wages, managing installers in the field, appointment setting, insurance, legal, and other back office support costs. The costs depend on productivity – how many meters a supplier can install a day per worker.[12] Suppliers install some meters themselves ('in-house') and contract for other installations ('third party').

3.19. We propose to include the amortised costs of installations. We propose to use historical ASR data where available. We have amended our approach in several ways since the October 2019 consultation. In particular, we now apply a meter rental uplift to the installation costs for certain meter types.

Overview of suppliers' responses to the October 2019 consultation

3.20. For historical installation costs, the main theme from suppliers was that their meter rental payments are higher than our modelled approach. For future installation costs, the main themes were: that installation costs per unit increase if suppliers install fewer meters than planned, and that future productivity would be lower than projected in the model.

Considerations – historical installation costs – meter rental costs

3.21. Some suppliers said that the rental payments for smart meters, especially those on deemed rates, were higher than our modelled estimates.

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[12] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019, pp19-20. https://www.gov.uk/government/publications/smart-meter-roll-out-cost-benefit-analysis-2019

3.22. We gathered data on meter rental payments. We have amended our approach, so as to include a meter rental uplift where there is a material cost difference between our modelled approach and the meter rental payments suppliers make. All else being equal (including rollout from the October 2019 consultation), this increases our assessment of the efficient net costs to suppliers.

Base approach

3.23. We start by estimating the amount of money suppliers spend per year on installations. We do not immediately recognise these costs in our review. These costs are capitalised and amortised (spread) over the life of the assets being installed. Our review (like the 2019 CBA) considers amortised costs.

3.24. For installation capital costs in historical years up to 2019 (inclusive), costs are based on suppliers' ASR data. As stated above, we propose to use the capital costs reported each year, not the time-weighted approach used in the 2019 CBA.

Introduction to meter rental payments

3.25. In practice, most suppliers take a different approach. They rent the meter from a Meter Asset Provider (MAP). The SMNCC model does not use a top-down approach of looking at the rental payments suppliers make to MAPs. Rather it uses a bottom-up approach of starting with the installation (and asset) costs incurred by suppliers.

3.26. The two approaches (bottom-up and top-down) are both based on suppliers' actual data. In theory, they should deliver similar results. The bottom-up approach shows the economic costs of purchasing and the installing smart meters. The rental payments that suppliers negotiate should reflect that economic cost.

3.27. There are two types of MAP rental charge. Contract rates are determined by the contract a supplier signs with an MAP. Deemed rates apply where a supplier does not have a contract in place with a MAP. This can occur, for example, when a supplier gains a meter from another supplier after a customer switches supplier. There could be reasons for deemed rates to be higher than contract rates. For example, the MAP can be exposed to greater risks when a supplier has not signed a contract, as the supplier is not liable to pay a Premature Replacement Charge (PRC) if a meter is replaced early.

3.28. However, evidence suggesting that costs are higher in one segment does not help us assess whether the costs in the SMNCC model are appropriate or not. What matters are the rental payments that suppliers make in aggregate, and the comparison between these and our modelled approach.

3.29. To consider this further, we gathered information from suppliers on meter rental payments. We looked at both contract rates and deemed rates, for smart meters and traditional meters.

Meter rental payments – smart meters

3.30. The rental data corresponds very closely to the modelled approach for SMETS2 meters. However, for SMETS1 meters, the cost under the rental approach is significantly higher than the modelled approach.

3.31. The cost in the rental data is also higher than the modelled approach even when looking at SMETS1 meters on the contract rental type only. This means that the difference cannot solely be due to meters on deemed arrangements – although this is clearly part of the cause.

3.32. We have considered possible reasons for the SMETS1 difference for contract meters. We consider that some are unlikely.

- Some of the inputs used in the modelled approach are based on actual data from suppliers (eg the costs of assets and installations, and the assumed contract length over which costs are recovered). These should therefore be similar in both the modelled approach and the rental data.

- Given the modelled approach is aligned with the rental data for SMETS2 meters, the cause of the difference for SMETS1 meters should not be a shared assumption across the two meter types. For example, if the cost of capital was wrong in general, this would have affected both meter types.

3.33. We have not identified a key factor which is likely to explain the difference between the modelled approach and rental data for contract meters. It could be possible that SMETS1 meters required a higher cost of capital than for SMETS2 meters. This could apply if the SMETS1 activity was riskier (eg due to unproven technology, or greater uncertainty as a transitional measure), and therefore meant that the MAP had to use a greater proportion of expensive equity, instead of cheaper debt. Suppliers might also possibly have focussed less on negotiating rates for SMETS1 meters (which were originally expected to be a transitional technology affecting a relatively small number of meters) with MAPs than they have spent negotiating SMETS2 rates (which is the enduring technology).

3.34. In any event, as there is a specific issue for SMETS1 meters, there is a question about whether and how we should correct for this. The issue is material. We have not identified individual assumptions which we should change to make our modelled approach better reflect the rental data. It may therefore be better to take a top-down approach, applying an uplift to SMETS1 costs based on the rental data. We propose to make this change to increase the accuracy of our results.

3.35. This change is still approximate.

- Our modelled approach already takes into account the risk that meters are replaced early – not through deemed rates, but through PRCs. The modelled approach assumes that all meters are potentially liable for PRCs – whereas in the rental data, some meters will face a higher (deemed) rate instead of being liable for PRCs. Applying an uplift, which includes the impact of deemed rates, could therefore double count the risk of meter replacements to some extent. However, the supplier data suggests that most SMETS1 meters are on contracts which include PRCs, and so this should not be a major issue. Rather than trying to account for this in the model, we record it as part of our review of uncertainty.

- The uplift is based on a single point in time. The difference between the modelled approach and rental data could in theory vary over time. We do not have any historical data to look at trends, and any conclusions about the future would be speculative, given that we do not know what the underlying cause of the difference between the modelled approach and rental data is.

3.36. We do not propose making an adjustment for SMETS2 meters. The rental data validates that the modelled approach is broadly correct at present. The rental data analysis is not sufficiently precise that we can use it to calibrate the modelled approach to a fine degree.

3.37. The modelled approach and rental data might or might not continue to align in future for SMETS2 meters. SMETS1 meters have been installed for longer than SMETS2 meters. Customers with SMETS1 meters have therefore had longer time to switch between suppliers, which could lead to a meter moving onto deemed rates. It is therefore possible that average SMETS2 rental payments could increase over time, relative to the modelled approach, as more SMETS2 meters churn onto deemed rates. However, this would depend on suppliers' contractual arrangements for SMETS2 meters, and how these evolve in the future – specifically whether suppliers are likely to have contracts in place with more MAPs for SMETS2 meters than they do at present for SMETS1 meters. We consider this point as part of our review of uncertainty.

Meter rental payments – traditional meters

3.38. For traditional meters, the rental data is reasonably close to the modelled approach for electricity. However, the costs for gas meters are much higher in the rental data than the modelled approach, particularly for credit meters.

3.39. As above, we have considered the potential causes of the difference for gas traditional meters. We can discount some of them.

- Deemed rates account for a relatively small proportion of the impact. Contract rates alone in the rental data are much higher than the modelled approach.

- Given the electricity rental costs are roughly in line with the modelled approach, it does not appear that the difference for gas would be due to common factors between fuels (eg the cost of capital, or installation costs)

- Gas meters do not have a shorter asset life than electricity meters. Based on our previous analysis of meter ages, gas credit meters are actually slightly older on average than electricity credit meters.

3.40. The difference may in part be due to the actual cost of a gas meter differing from the modelling inputs. However, we do not see evidence that this could explain the full difference between the modelled approach and rental data.

3.41. Regardless of the cause, as with SMETS1 meters, we need to consider whether to correct for this. We propose to add an uplift for the cost of traditional gas credit meters based on the rental data, for the same rationale.

3.42. We do not propose to make any adjustment for traditional electricity credit meters, given that the difference between the modelled approach and the rental data is small.

Considerations – historical installation costs – other issues

3.43. In this section we consider: the costs for gas single fuel installations, the proportion of pairs of meters installed as part of a dual fuel installation, and meters which are installed for a second time ('recycled meters').

3.44. We gathered information in relation to the first two of these issues. We have changed our approach in relation to both of these issues. All else being equal, the change to the cost of gas single fuel installations will increase our assessment of the efficient net costs to suppliers, and the change to the proportion of pairs of meters installed as part of a dual fuel installation will decrease our assessment of the efficient net costs to suppliers. We have not changed our approach in relation to recycled meters, but we consider this issue within our review of uncertainty.

Gas single fuel installations

3.45. Our October consultation SMNCC model followed the 2019 CBA in assuming that gas and electricity single fuel installations have the same cost. One supplier told us that this assumption was incorrect, as gas installations take longer for technical reasons.

3.46. We gathered data on the durations of gas and electricity single fuel installations. This confirms that single fuel gas installations take longer on average, and would therefore have higher costs. We have therefore implemented a change to scale up the cost of a single fuel gas installation.

3.47. There is also a consequential change which affects the model functioning, but not the results. The SMNCC model calculates the cost of a dual fuel installation by adding together the cost of an electricity and a gas single fuel installation, and then subtracting a dual fuel efficiency value. This delivers the cost of a dual fuel installation based on ASR data. We therefore want to maintain this dual fuel installation cost. If we increase the cost of a single fuel gas installation, we therefore need to increase the dual fuel efficiency value, in order to deliver the same dual fuel installation cost.

Proportion of pairs of meters installed as a dual fuel installation

3.48. The SMNCC model contains an assumption for the proportion of pairs of meters installed as part of a dual fuel installation. In other words – of the premises which have both gas and electricity supplies, this is the proportion where the smart meter installation was carried out at the same time for both fuels. Increasing the proportion of dual fuel installations reduces installation costs, due to the efficiencies available.

3.49. In line with the 2019 CBA, the October 2019 consultation SMNCC model assumed that two-thirds of pairs of meters are installed as part of a dual fuel installation. In order to test this assumption, we requested information from suppliers on the number of gas smart meter installations in 2019, split by dual fuel and single fuel installations. (We asked about gas meters specifically because there are very few domestic premises which have a gas supply but not an electricity supply, and because there are fewer gas meters than electricity meters. The number of gas meters is therefore a proxy for the number of pairs of gas and electricity meters).

3.50. The data indicates that a materially higher proportion of gas smart meter installations in 2019 were part of a dual fuel installation visit than we had assumed in the October 2019 consultation. We therefore propose to replace the existing assumption with the figure calculated from the RFI, in order to improve accuracy.

Recycled meters

3.51. As part of its RFI response, one supplier told us that, where it reuses a meter which has previously been installed and then removed (a 'recycled meter'), it bears the cost of the installation in this case (rather than the MAP). It later confirmed that this cost was expensed in year.

3.52. This issue should be specific to SMETS1 meters. SMETS2 meters are interoperable, and therefore should not be replaced when a customer switches supplier. This means that suppliers would not receive removed SMETS2 meters. Furthermore, suppliers should now only be installing small volumes of SMETS1 meters, in particular circumstances. Recycled meter installation costs should therefore not be a material issue in future.

3.53. Recycling a meter affects the cost of meters and installations.

- If a supplier is able to recycle a meter, then it does not need to pay for a PRC in relation to the meter asset cost. It can continue paying for the meter over time when it is reinstalled. The supplier therefore avoids an immediate lump sum cost.

- The supplier incurs an installation cost, whether it is installing a new or a recycled meter. However, the immediate impact is greater when installing a recycled meter (at least under this supplier's contractual arrangements), because the supplier bears the installation cost and expenses it, rather than amortising it over the contract length.

- As installation costs are larger than meter asset costs, the net impact on the supplier will be a cost in year (even if the supplier is saving money in the long-run by recycling the meter). We do not currently take this into account in the SMNCC model.

3.54. We do not propose to take this into account in the SMNCC model. This is because of the complexity of doing so. We also do not currently have evidence that this is a widespread issue – or for example whether this relates to a supplier's specific contractual arrangements or circumstances. Instead, we propose to take this into account in our review of uncertainty.

Considerations – installation costs in future periods

3.55. The main issues suppliers raised were that installation costs per unit increase if they install fewer meters than planned, and that future productivity would be lower than projected in the model.

3.56. We propose to project installation costs in line with historical levels of productivity in 2017-19. We propose to take into account the impact of COVID-19 on sunk costs through a special adjustment for 2020. See Chapter 4 of the main consultation document for more information on our approach to rollout and costs in future years.

Introduction

3.57. The 2019 CBA estimates future installation costs. The starting cost base used by the 2019 CBA is a mixture of 2017 and 2018 ASR data. It then necessarily makes assumptions about productivity. For 2019, the 2019 CBA forecasts installation productivity using suppliers' rollout plans. For 2020 and beyond, the 2019 CBA assumes that productivity will improve – reaching a maximum of five installations per worker per day in 2020 and 2021 (ie 2.5 dual fuel installations). Productivity then reduces, as the number of customers without smart meters decreases, and it becomes more challenging for suppliers to reach the final installations.

3.58. Clearly, future productivity is uncertain. The 2019 CBA sets out sensitivity tests on this assumption.[13] Its productivity assumptions are based on factors such as interventions by the programme to help suppliers increase productivity through sharing good practice as well as evidence from third-party installation companies and data collected as part of the programme's ongoing engagement with energy suppliers.

3.59. We have considered the extent to which installation costs are fixed or variable with the number of meters installed. In the long term costs should be variable. If an efficient supplier installs fewer meters, it requires fewer workers. In the short or medium term costs may act more like fixed costs, as suppliers may not be able to adjust their plans and costs quickly.

3.60. The 2019 CBA estimates installation costs in future periods by assuming that average in-house installation costs (excluding training costs) move inversely with installer productivity. In effect, this assumes that a supplier's cost base is fixed for a period, and that there are no incremental costs from increasing the number of installations, nor benefits from reducing them.

Productivity

3.61. Some suppliers told us that the installation productivity assumption was too high.

3.62. We propose to maintain the approach of projecting future installation costs based on changes in productivity. We consider the approach to estimating future installation costs reasonable for our purposes. The largest in-house costs, including the number of

[13] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019, page 78. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

installers, are likely to be fixed for a period. A reduction in the number of meters installed would therefore reduce productivity and increase unit costs.

3.63. Changes in productivity are not the only potential driver of changes in installation cost per meter. In theory installer productivity may improve, but this may be offset by other cost trends. For example, the costs of appointment setting could increase if additional work is required to deliver a greater number of successful installation appointments. We consider that a simple approach to modelling future installation costs is sufficient, especially given that we can review the costs actually achieved in future.

3.64. As we now have 2019 ASR data, we have updated our analysis to use this as the starting point for projecting future costs.

3.65. We consider the level of productivity alongside rollout, in Chapter 4 of the main consultation document.

Stranded installation costs

3.66. Suppliers said their costs are mostly fixed, and therefore stranded when they deliver fewer meters than planned (eg due to industry delays). One supplier said that delays to central systems had continued into 2019, affecting rollout. It also said that consumers' willingness to accept a smart meter is declining over time, making it plausible for an efficient supplier to have stranded fixed costs in future years.

3.67. In Chapter 4 of the main consultation document, we discuss the impact on installation costs of rollout being behind expectations in historical years, and the specific impacts of COVID-19 in 2020.

3.68. We note the point about consumers' willingness to accept a smart meter potentially varying over time. However, as there is still a significant pool of customers who do not have a smart meter and indicate that they would be willing to accept one, this does not appear to be an immediately binding constraint on suppliers' rollout activities. The supplier who raised this point referred to data published by Smart Energy GB (SEGB) through its Smart Energy Outlook. The latest data published in March 2020 shows that the proportion of people without a smart meter saying that they would seek or accept one in the next six months had increased slightly since the previous publication.[14] This does not show evidence of a recent fall in consumers' willingness to accept a smart meter.

Scaling smart programme

3.69. One supplier told us that "suppliers must scale their smart programme for a reasonable high case of customer numbers". We understand the point being that a supplier's customer numbers are subject to uncertainty, and are therefore partly outside that supplier's control – yet the supplier would need to have already decided the size of its smart metering operations before it knew its actual customer numbers.

3.70. We do not accept that suppliers have to systematically scale their smart programmes above their current size. Suppliers must remain compliant with all regulations, even as their customer numbers change. A supplier that is seeking to grow significantly should therefore ensure that its operations, including its smart metering operations, are able to serve its target size. However, a supplier's customer numbers will partly depend on its business strategy, which is within its control. Furthermore, the rollout is an obligation to achieve a particular outcome over time, rather than instantaneously (unlike for example customer service or billing). Therefore, even if a supplier had more customers than expected, it would be able to adjust its smart metering operations in response, rather than scaling these up in advance as a contingency.

Asset costs

Overview of our approach

3.71. Each year, suppliers install assets in their customers' homes. These include the meters, communication hubs, and in-home displays. They may rent these assets from MAPs, in which case the supplier will pay fees over the rental period. Alternatively, the supplier

[14] March 2020 update figure: 35%. Smart Energy GB (2020), Smart Energy Outlook, March 2020, p5.
https://www.smartenergygb.org/en/-/media/SmartEnergy/essential-documents/essential-documents/english/Outlook-March-2020.ashx
September 2019 update figure: 32%. Smart Energy GB (2019), Smart Energy Outlook, September 2019, p5.
https://www.smartenergygb.org/en/-/media/SmartEnergy/essential-documents/essential-documents/english/Outlook---September-2019-PROOF-731.ashx

may have purchased the assets, and amortise that capital investment over the life of the asset.

3.72. In line with the 2019 CBA, we discuss these assets as though they are all purchased and amortised. In practice, this is not the case. As the cap relates to income and expenditure, we do not seek to allow for the capital costs of asset at the point they are installed, only the amortised costs.

3.73. We have maintained the broad outline of our approach in this area, but have made a number of changes. In particular, we apply a meter rental uplift to the costs of meter assets and communications hubs in line with the approach to installation costs discussed above.

Overview of suppliers' responses to the October 2019 consultation

3.74. Suppliers' comments were primarily focussed on smart meter assets. Suppliers raised concerns that: the costs of these assets were higher in general, the costs for particular meter types were higher, and that the model did not include costs for SMETS1 assets that suppliers had been unable to install due to the switchover from SMETS1 to SMETS2 (referred to as 'stranded assets').

Considerations – smart meter asset costs

3.75. The main issues in this area are: the costs of meter assets in general, the cost of 868MHz gas meters, and the costs of stranded assets.

3.76. We have made changes in this area. We have added a meter rental uplift. We have updated the assumptions for the cost of 868MHz assets. We have added the costs of stranded assets to the SMNCC model. All else being equal (including rollout from our October 2019 consultation), these changes will increase our assessment of the efficient net costs to suppliers.

General approach

3.77. The average capital costs of smart meters differ each year. The 2019 CBA uses a time-weighted average cost. As stated above, we propose to modify this approach, by using the relevant costs for each year.[15]

3.78. For historical years, we propose to use the annual profile of these costs from the ASR data up to and including 2019.

3.79. One supplier said that its meter purchase costs were higher than the meter costs assumed in the October 2019 consultation model. Meter asset costs vary to some extent between suppliers. A particular supplier will not know its competitors' costs. There will be some degree of variation around the average – this does not indicate a problem.

3.80. For future years, the CBA estimates meter capital costs based on observed trends for traditional metering equipment. It decreases costs by 1% per annum to the end of the rollout, and includes a 5% uplift for optimism bias. (We discuss optimism bias further below).

3.81. We propose to take the same approach to the meter rental uplift as discussed in the installation costs section.

868MHz assets

3.82. Some suppliers said that the costs of 868MHz assets (gas smart meters and In-Home Displays (IHDs)) were higher than assumed in the 2019 CBA model.

3.83. We gathered data to check this. Suppliers have not yet installed 868MHz equipment. This means that we had to ask suppliers about their expectations of the additional cost of 868MHz gas meters and IHDs in the future (rather than the costs they had incurred to date). The data we received is therefore based on a mixture of commercial

[15] In our analysis of the ASR data, we calculate both a lower quartile and a weighted average. In some cases, the lower quartile is above the weighted average. This is because the weighted average takes into account suppliers' installation numbers, whereas the selection of the lower quartile does not. It does not indicate an error in the calculations.

discussions with manufacturers (at various stages) and existing contractual information. This may unavoidably increase the degree of uncertainty around the figures provided – as does the limited number of suppliers who were able to provide information.

3.84. The RFI data suggests that 868MHz assets (gas meters and IHDs) cost more than the assumptions in the 2019 CBA. The cost estimates were reasonably consistent between suppliers for the additional cost of an 868MHz gas meter. This provides some degree of confidence that, although these are estimates, they are not distorted by an outlying figure. There was a more variation in relation to the additional cost of an 868MHz IHD – but this is a smaller absolute cost.

3.85. We propose to update the assumptions for both of these asset types in the SMNCC model. Despite its limitations, the data we received is more recent than the 2019 CBA assumptions. On balance, using this data is likely to increase the accuracy of the model – though we consider this change within our review of uncertainty.

3.86. We also propose to amend the assumed profile of assets subject to an 868MHz uplift. We noted that the assumptions from the 2019 CBA model were slightly different between gas meters and communications hubs. This was in relation to both the proportion of meters subject to an 868MHz uplift and the timing for when this uplift applied. For gas meters, the model applies the 868MHz uplift to 50% of meters installed each year from 2018. For communications hubs, the model applies the 868MHz uplift to 42% of meters installed each year from 2020. BEIS has confirmed that the communications hub profile is the correct one, and so we have applied this profile to gas meters as well.

Three phase meters

3.87. One supplier said that three phase electricity meters would be used in small numbers but cost significantly more than standard meters.

3.88. We do not propose to include a specific cost uplift for three phase meters. We understand these are very uncommon in domestic premises (as they are only relevant to premises with large demand). Trying to estimate a specific cost uplift for these meters would therefore not have a material impact on the SMNCC allowance.

Fixed asset costs

3.89. One supplier told us that some asset costs were fixed. Specifically, it said that suppliers require technical knowledge and have to carry out research. It raised this point in the context of explaining that some asset costs would not be saved in the event of slower rollout.

3.90. Suppliers may have some fixed meter asset costs that do not depend on the number of meters installed (eg the costs of liaising with manufacturers). However, the level of such costs in 2017 should be included in the operating cost baseline. All that would matter was any change in these costs since 2017.

3.91. After clarifying the scale of this issue with the supplier who originally raised it, it appears that these are costs that have been incurred over the smart meter rollout. However, the supplier noted that it expected these costs to rise in future due to testing the prepayment and dual band communications hub solutions. Based on our current evidence, we consider any fixed asset costs should largely be included in the 2017 operating cost baseline. After considering feedback to this consultation, we will decide whether any increase in these costs since 2017 appears sufficiently widespread to take into account within our review of uncertainty.

Stranded asset costs

3.92. One supplier told us that it had incurred a cost for stranded SMETS1 meters, as it had maintained a stock to cover delays to the DCC. It had not been able to install these meters due to the SMETS1 end date.[16]

3.93. The costs of any stranded meters (as well as communications hubs and IHDs) are not factored into the ASRs, because the ASR template asks for unit costs. (In contrast, the ASR question on installation costs looks at average costs). We gathered data in this area following the October 2019 consultation.

[16] This was the date after which suppliers were not allowed to install more SMETS1 meters to meet their rollout obligations, except in certain limited circumstances.

3.94. Few suppliers had stranded SMETS1 assets at the end of 2018, despite the SMETS1 end date being in late 2018 for credit meters. This appears to be because suppliers had derogations to carry on installing SMETS1 meters into 2019. For 2019, SMETS1 stranded asset costs were common among large suppliers.

3.95. We propose to include SMETS1 stranded asset costs in the SMNCC model (as calculated using the data above), given this reflects an additional cost of the rollout which is not currently included. We note that suppliers may have been able to reduce these costs if they had managed their asset stocks more efficiently. However, this is only a one-off issue. It only affects the level of the cap through the carry forward calculation for the third cap period.

3.96. The costs suppliers ultimately face may be slightly lower than the costs we propose to include, meaning that our figure would be conservative. Suppliers indicated that they would continue to install SMETS1 assets in certain cases. However, this would account for small numbers of assets, relative to the total number of stranded assets. We therefore consider this would have a minor impact.

Non-installed meters

3.97. The SMNCC model currently only includes asset costs from the point of installation. There are no costs for meters awaiting installation. In response to the draft version of our most recent RFI, one supplier referred to meters which are not installed. We amended the final version of RFI to gather data on the rental costs for non-installed meters, separately from installed meters.

3.98. For smart meters, several suppliers indicated that they paid rental charges on non-installed meters. However, this was not universal. For SMETS1 meters, the average rental payments per meter for non-installed meters were broadly similar to the equivalent figures for installed meters. However, for SMETS2 meters, the weighted average rental payment was much lower for non-installed meters than for installed meters. This is due to a couple of suppliers with zero rental payments for their stock of non-installed meters. While this may correctly reflect their circumstances, it does illustrate the difficulty in reflecting the range of contractual arrangements that suppliers have. For traditional meters, most suppliers indicated that they had zero costs for non-installed meters.

3.99. In principle, it makes sense that suppliers might incur costs for non-installed meters. The meter still needs to be paid for by someone, regardless of whether it is installed or not. However, the contractual arrangements clearly vary by supplier, and between smart and traditional meters.

3.100. We propose to take this issue into account in our review of uncertainty. The total costs do not appear to be very large. Furthermore, the impact on the SMNCC allowance would only be through the difference in non-installed costs between 2017 and a given future year. We would expect suppliers to have had a stock of smart meters awaiting installation in 2017, so this difference might not be large. (The impact in 2020 could however be larger than in previous years, due to the impact of COVID-19). Even if we wanted to model the possible evolution of these costs over time, it would be difficult to do this in a robust way, given the variation in contractual arrangements between suppliers.

Considerations – communications hubs

3.101. Communications hubs send information from a smart meter to suppliers (via other organisations, such as the DCC). The cost of communications hubs for SMETS2 meters are recovered in DCC charges. These are included in the pass-through SMNCC allowance and therefore we do not include them in our review.

3.102. The main comment in response to the October 2019 consultation was about the enrolment assumptions for SMETS1 meters. One supplier also highlighted a calculation issue.

3.103. We have maintained our approach in this area, aside from addressing calculation issues.

General approach to SMETS1 communications hubs

3.104. We include the cost of communication hubs for SMETS1 meters in our review (in the ‘other costs’ category). As with the costs above, for historical years we propose to use annual costs reported in ASRs, rather than then 2019 CBA’s time-weighted approach. As above, we also apply the same meter rental uplift to the cost of SMETS1 communications hubs.

3.105. There should be few new SMETS1 communications hubs being installed in 2020 and beyond (as SMETS2 meters become standard). Industry data shows that suppliers were still installing a small proportion of SMETS1 meters (and therefore SMETS1 communications hubs) in the first two months of 2020. We use this proportion for the whole of 2020. (This is as opposed to following the 2019 CBA in assuming that there are no SMETS1 meters installed in 2020 and beyond). This may slightly overstate the proportion of meters installed in 2020 which are SMETS1, as the number of SMETS1 meters installed has been falling over time. From 2021, we maintain the 2019 CBA assumption that the proportion of SMETS1 meters installed is zero.

SMETS1 enrolment

3.106. SMETS1 communications hub operating costs are included in the non-pass-through SMNCC allowance until these meters are enrolled with the DCC. After this point, the costs fall within DCC charges, and therefore shift to the pass-through SMNCC allowance.

3.107. One supplier said that the enrolment assumptions for SMETS1 meters were unrealistic based on current progress.

3.108. In the communications hub operating cost section, the SMNCC model currently assumes that 14% of SMETS1 meters are enrolled at the end of 2019, rising to 72% at the end of 2020, and reaching 99% at the end of 2021. This appears consistent with our expectation for the progress of enrolment, and therefore we do not propose changes in this area.

3.109. The supplier’s submission does however illustrate a more general point. As constructed, the model looks at the number of meters at the end of each year, and calculates the costs and benefits based on this. In line with the SMNCC model used for the November 2018 decision, we then defer direct operational benefits by half a year. This reflects that each meter will be installed on average halfway through the year, and benefits will only be generated once the meter is installed. Otherwise, we do not attempt to take into account the timing of benefits within each year. This level of granularity was certainly not required for the 2019 CBA, which had a long appraisal period.

3.110. The supplier’s suggested enrolment profile is based on the <u>average</u> number of meters enrolled during the year, not the number of meters enrolled at the <u>end of the year</u>. In isolation, this point could have merit – we would expect a supplier to incur communications hub operating costs until the point in the year that the SMETS1 meter is enrolled with the DCC. However, there will be other cases where the end of year modelling approach is advantageous to suppliers.[17] We do not propose to change our overall modelling approach to try to model costs within year – we do not consider that this level of granularity is required.

Liquidated damages

3.111. The communications hub calculation in the 2019 CBA model includes a small provision for suppliers to pay some of the costs of communications hub failures. The assumption, which feeds into the communications hub operating cost calculation, is that suppliers incur a liquidated damage rate of £50[18] up to a 0.5% threshold for supplier liability. In other words, suppliers incur a cost of £0.25 per communications hub per year, in order to cover (part of) the cost of failing communications hubs.

3.112. The liquidated damage rate is much higher than the cost of a SMETS1 communications hub. This is surprising – if the charge is intended to provide compensation for damage to a communications hub, then we might expect that this would be no higher than the cost of a completely new communications hub.

3.113. We understand from BEIS that this is an assumption held over from the 2016 CBA. At this point the liquidated damage rate was still higher than the assumed cost of a communications hub. There may therefore have been a reason why the liquidated damage rate should be higher than the cost of a communications hub, contrary to our expectation.

3.114. We therefore do not propose changing this assumption. Although there is a possibility that this assumption is overstated, it would not be material, and we do not have sufficient evidence to be confident that making a change would increase the accuracy

[17] For example, operating and maintenance (O&M) costs will increase over a year, as more meters are installed. We calculated O&M costs based off the end of year position. This will overstate the cost in a given year (eg 2020).
[18] In 2011 prices.

of the SMNCC model. We take this potential conservatism into account in our review of uncertainty.

Calculation issues

3.115. One supplier's advisers identified a formula error with calculating communications hub costs for 2015 and 2016. We currently estimate these costs, as the data appeared unavailable from the BEIS calculations. However, the stakeholder noted that the raw information was available.

3.116. We have corrected the calculation error noted by one supplier. We have also corrected a further issue we spotted in relation to converting costs and benefits to a pounds per meter basis.

Considerations - In-Home Displays

3.117. Suppliers install IHDs which display information to customers about their energy use.

3.118. We did not receive any specific comments on this area in response to the October 2019 consultation.

3.119. We have maintained our approach in this area.

Approach

3.120. The historical costs of IHDs in the 2019 CBA are based on ASR data. As above, we propose to use annual averages from the ASRs, rather than a time-weighted average. The CBA makes a downward adjustment to reflect that several suppliers have purchased IHDs with enhanced functionality above the Smart Metering Equipment Technical Specifications (SMETS) requirements at an additional cost. We maintain this approach, still applying the downward adjustment calculated by BEIS using 2018 data.

3.121. We propose to use the asset cost in 2019 for future years.

3.122. Unlike other asset costs, the CBA expenses the full cost of an IHD in the year of installation. BEIS validated this assumption with MAPs. We propose to use the same approach. Given IHD costs are expensed, we therefore also do not include a meter rental uplift for IHDs.

Considerations – amortising in-premises costs

3.123. In response to the October 2019 consultation, one supplier raised a concern about the 12-year meter rental period we use.

3.124. We have maintained our approach in this area.

General approach

3.125. We amortise relevant in-premises costs (installation costs, meter costs, and communication hub costs) over the life of the meter. We have considered two issues:

- **The expected life of the asset:** The 2019 CBA assumes that all meters are manufactured in accordance with the SMETS[19] with a lifespan of 15 years.[20] The 2019 CBA amortises costs over this period.

- **Average amortisation profiles:** In response to previous consultations, suppliers suggested that a 15-year life did not reflect how they actually recognise these costs (nor reflect their rental agreements with MAPs). We requested data on the length of meter rental agreements to assess the significance of different approaches. In general, suppliers suggested they pay an initial rate over the rental period for the asset, and then pay some form of peppercorn rate (ie a significantly lower charge) following the end of the rental period. Specific approaches differed between suppliers and agreements, but this was the general approach. In general, ten-year rental agreements are most common, but the weighted average is 12 years for electricity and gas SMETS1 meters, 12 years for electricity SMETS2 meters and 13 years for gas SMETS2 meters.

3.126. We propose to amortise capitalised installation, meter, and communications hub costs over a 12-year period to reflect the weighted average meter rental periods. (We consider that this is a sufficient approximation of the weighted averages calculated

[19] Example of SMETS specifications: https://www.gov.uk/government/consultations/smart-metering-equipment-technical-specifications-second-version
[20] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019, page 17: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

above, which are all around 12 years). This better reflects how costs are incurred than spreading costs over the expected life of the meters.[21]

Supplier differences

3.127. One supplier said that it was concerned that there was an error with the assumed 12-year weighted average rental agreement length for SMETS1 meters.

3.128. An individual supplier would not know about the contractual arrangements of its competitors. Its view does not mean that the weighted average is wrong. As noted above and in the October 2019 consultation, ten-year agreements are the most common, but the weighted average is above this.

Considerations - cost of capital

3.129. We have maintained our approach in this area.

General approach

3.130. One supplier said it supported the approach.

3.131. The 2019 CBA calculates financing costs. These financing costs are included in the asset costs, installation costs and IT costs. The 2019 CBA assumes a 6% cost of capital across all market participants, on a real post-tax basis. This is appropriate for the 2019 CBA.[22] However, our review must consider a pre-tax cost of capital, given that the SMNCC allowance ultimately needs to provide suppliers with pre-tax revenue. Market participants will need sufficient funding through our allowance to pay tax.

3.132. We propose to maintain the 2019 CBA approach, but convert it into real pre-tax terms. (This is the approach we consulted on in October 2019). We have applied an uplift to the 6% post-tax cost of capital, such that the uplift is equal to "1 / (1 – t%)", where t is the corporation tax rate. The approach is an approximation. We apply the current

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[21] While this difference has an impact on the SMNCC allowance, it is immaterial for the 2019 CBA.
[22] HM Treasury (2018), The Green Book – central government guidance on appraisal and evaluation, paragraph 6.7. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

corporation tax rate to all years. We also assume the average market participant is entirely equity-financed, which will not be the case for all market participants (particularly MAPs). We consider the impact in our review of uncertainty.

Premature Replacement Charges (PRCs)

Overview of our approach

3.133. Suppliers incur a charge for replacing a meter before its costs have been paid off – a PRC. The level of the PRC depends on a number of factors including the contract with the meter owner and (in particular) the age of the meter. Generally, the PRC a supplier faces decreases as the meter ages.

3.134. We propose to include PRCs for traditional meters. The broad approach is the same as we proposed in the October 2019 consultation. We propose to model PRCs using the distribution of traditional meter asset lives. We assume that the age of the meters replaced reflects the age of the population of meters. We assume that the PRC decreases linearly over a 15-year period. However, we have modified the approach to add a meter rental uplift and to remove double counting between PRCs and annuitised costs.

3.135. We propose to include PRCs for SMETS1 meters. The broad approach is the same as we proposed in the October 2019 consultation. However, we have made several modifications to the calculations, in particular to increase the proportion of SMETS1 meters replaced prematurely, and to remove double counting between PRCs and annuitised costs.

3.136. We do not propose to include PRCs for SMETS2 meters. This maintains our position from the October 2019 consultation.

Overview of suppliers' responses to the October 2019 consultation

3.137. The key comment in relation to PRCs for traditional meters was that we had not explained why we were using a modelled approach rather than suppliers' (higher) actual PRCs for gas meters. For SMETS1 meters, suppliers said that the proportion of SMETS1 meters incurring PRCs would be higher than we had modelled. Suppliers also raised various issues with the calculation of SMETS1 PRCs.

Considerations – PRCs for traditional meters

3.138. In summary, one supplier raised concerns about: using the modelled costs rather than suppliers' actual PRCs for gas, the input assumption that the traditional meter costs are flat over time, and using data from suppliers beyond the six largest.

3.139. We have largely maintained our approach. However, we have modified the approach to add a meter rental uplift, and to take into account the avoided annuitised costs in future years after incurring a PRC. All else being equal, the former will increase our assessment of the efficient net costs to suppliers, and the latter will reduce it.

Introduction

3.140. This issue is not relevant to the 2019 CBA, which excludes these costs. PRCs represent forgone meter rental costs. In a counterfactual world without smart metering, suppliers would have incurred meter rental costs for traditional meters. The timing of those costs are different, but the amount (which the 2019 CBA is interested in) is not.

Methodology

3.141. We included an estimate of PRCs for traditional meters in the original SMNCC model, using a simplified approach. In response to our April 2019 consultation suppliers suggested that we collect data to help us improve our estimate of PRCs. We collected data on meter asset lives, which helps us to model the relevant costs (bottom-up). We also collected actual PRCs, to consider the costs suppliers have actually paid (top-down).

3.142. We propose to model the PRCs using the distribution of traditional meter asset lives. (This is the approach we proposed in the October 2019 consultation).

- **Age of meters.** We have collected data on the age of traditional meters at the end of 2018. The average age is around 12 years for electricity meters and 13 years for gas. 7-8% of meters were installed between 2016 and 2018 (0-2 years old)[23] and 20-30% are more than 20 years old (ie there is a long tail of old

[23] Despite the advent of the smart meter rollout.

meters. We assume that the distribution remains constant in future years, but ages. We assume no new traditional meters are installed after 2018. This is later than in our previous analysis for the November 2018 decision, which assumed that no new traditional meters were installed from the start of 2016. This is a small simplification – in practice suppliers may still install traditional meters in certain circumstances.

- **Random selection.** In principle an efficient supplier would target old meters, as these incur lower (or zero) PRCs. A few suppliers did indicate that they have taken PRCs into account when deciding which meters to target, at least to some extent. However, we do not consider it practical that suppliers can always target the oldest meters, as there are other factors involved when prioritising installations (such as which consumers express interest in a smart meter). We therefore assume conservatively that suppliers have no control of the PRCs incurred – ie that the meters replaced reflect the population of meters. In response to the October 2019 consultation, some suppliers agreed with the assumptions used, including the approach of assuming that rollout is not targeted based on PRC size.

- **Forgone rent.** We assume that PRCs for traditional meters are due over a 15-year period. We use a linear profile as a simple and reasonable approximation.

Actual PRC data

3.143. One supplier said that we had not provided an explanation for using modelled costs rather than actual costs in relation to gas, where actual costs are higher than the modelled approach. The supplier also queried the assumption that traditional meter costs were flat over time (as an input to the PRC calculation). It said that the costs of traditional meters installed more recently would be similar to those in suppliers' ASR returns.

3.144. The weighted average PRCs per meter using supplier data on their charges in 2018 is significantly lower than the value we estimate using our modelling for electricity meters, and higher than our estimates for gas. We consider that actual charges may not be a reliable guide:

- **Internal charges:** Some suppliers are also traditional meter owners, and do not charge an internal PRC. This approach ignores the real economic cost to the different sections of the business, one of which is the supply company.

- **Future cap periods:** We are reviewing costs for all future cap periods. So even if we use 2018 charges as a base, we need to make assumptions about how traditional meters will age. This collapses into some version of the bottom-up approach.

3.145. For consistency with our approach to in-premises costs, we have applied the same rental uplifts to the input costs. As we apply an uplift in the modelled approach for gas, the modelled PRC is now higher than the actual data. The supplier's concerns are therefore no longer relevant. For gas meters, this uplift also mitigates concerns about traditional meter asset costs being higher in recent years.

3.146. We propose to estimate average PRCs using the meter asset life data. We consider these costs may be conservative (at least for electricity), given the data on actual average charges. We take this into account in our review of uncertainty.

Suppliers to include

3.147. One supplier said that we should base our PRC analysis on the six largest suppliers only. This was because suppliers who have grown recently would have chosen to structure their (traditional) meter rental contracts differently, knowing the risk of these assets needing to be replaced prematurely due to the smart meter rollout.

3.148. We do not agree with the suggestion of using data from large suppliers only. Given that we are modelling PRCs (rather than using data on actual PRCs incurred by suppliers), we are only using data from suppliers about the distribution of meter ages for the PRC calculation. We do not expect that meter ages will be influenced by the point a given supplier entered the market.

Avoided annuitised costs

3.149. In our revised SMNCC model, we have also included the avoided annuitised asset and installation costs, in the years after a supplier incurs a traditional meter PRC.

3.150. We added traditional meter PRCs when creating the SMNCC model. PRCs pay off the remaining cost of a meter in full. However, in subsequent years the supplier avoids paying the annuitised cost of the asset and installation. This applies up to the scheduled end of the meter's life. We therefore propose to take account of this by including an offset.

Considerations – PRCs for SMETS1 meters

3.151. For SMETS1 meters, suppliers said that the proportion of SMETS1 meters incurring PRCs would be higher than we had modelled. Suppliers also raised various issues with the calculation of SMETS1 PRCs.

3.152. We have changed our approach in several ways. We have added a meter rental uplift. We have gathered data on the number of SMETS1 meters replaced historically, and have used this to increase the proportion of SMETS1 meters incurring PRCs. We have shifted the timing of enrolment (and therefore meters incurring PRCs in later years) into the future. We have addressed various calculation issues. All else being equal, this will increase our assessment of the efficient net costs to suppliers. However, we have also included the avoided annuitised costs in subsequent years after incurring a PRC. All else being equal, this will reduce our assessment of the efficient net costs to suppliers.

General approach

3.153. In principle, SMETS1 meters should be enrolled with the DCC and would therefore operate for their lifespan. There would be no PRCs for these meters.

3.154. In response to previous consultations, some suppliers raised concerns that not all SMETS1 meters will be enrolled, as few projects are ever 100% effective. On that basis, suppliers may incur PRCs for SMETS1 meters they are unable to enrol.

3.155. The 2019 CBA model makes provision for the proportion of SMETS1 meters it expects might be replaced by SMETS2 meters. As above, no PRCs are included in the 2019 CBA.

3.156. We propose to include PRCs for SMETS1 meters.

- **Age of meter:** We model the age profile of SMETS1 meters using the number of installations from the SMNCC model.

- **Random selection**: For the distribution of meter ages, we propose to use the number of SMETS1 meters installed each year and assume the age of a meter does not make it more or less likely to not be enrolled.

- **Foregone rent**: To estimate the charge, we will calculate the costs still to pay off from remaining life of the rental agreement. We use a 12-year average rental agreement, in line with the analysis above.

3.157. In response to the October 2019 consultation, one supplier said it welcomed the inclusion of PRCs for SMETS1 meters.

Proportion of meters affected by PRCs

3.158. In the October 2019 consultation, the volume of meter replacements was the assumption from the 2019 CBA for the proportion of SMETS1 meters replaced by SMETS2 meters. This meant we assumed that SMETS1 PRCs were largely incurred in 2019, with a small residual in 2020.

3.159. Several suppliers raised concerns with the proportion of SMETS1 meters incurring PRCs.

- Some of the concerns were that a higher proportion of meters may fail enrolment than the 2019 CBA model assumed.
- Suppliers also told us that they may incur PRCs for reasons other than enrolment, especially when a customer switches supplier. Some suppliers told us that they can incur a PRC if a customer switches to another supplier, and the gaining supplier decides to replace the SMETS1 meter.

3.160. We look first at the proportion of SMETS1 meters which are assumed to fail enrolment. We then look at SMETS1 meters which are replaced early for other reasons.

3.161. We maintain the original assumption for the proportion of meters that are expected to fail enrolment. This proportion is based on expertise from BEIS. The proportion of meters failing enrolment is inevitably subject to uncertainty, given that the enrolment process has only just started. However, we have not seen evidence for a higher proportion failing enrolment.

3.162. The one exception is in relation to EDMI SMETS1 meters. BEIS recently consulted on a proposal not to enrol these meters within the DCC.[24] Suppliers would therefore need to replace these meters with SMETS2 meters. This relates to a very small proportion of SMETS1 electricity meters, which are not included in the original assumption for the proportion of meters failing enrolment. This proposal is still subject to consultation. However, for the purpose of our analysis, it is prudent to assume that these meters are replaced prematurely as proposed.

3.163. We allocate the total assumed proportion of meters failing enrolment between years, in line with the proportion of SMETS1 meters enrolled in each year. This assumes that there is some relationship between the proportion of meters where enrolment is attempted, and the proportion which fail enrolment.

3.164. We then consider the proportion of SMETS1 meters replaced prematurely for other reasons.

3.165. We gathered information on the proportion of SMETS1 meters replaced early between 2017 and 2019. The data suggested that suppliers have consistently replaced a small proportion of their SMETS1 meters each year. Suppliers said they incurred PRCs for reasons such as: meter faults, smart meters losing functionality after a change of supplier, replacing a SMETS1 meter operating in credit mode with a legacy prepayment meter if the supplier did not offer a SMETS1 prepayment meter, or customers requesting a traditional meter.

3.166. We propose to use suppliers' figures for the proportion of SMETS1 meters replaced prematurely for 2017 to 2019. For 2017 and 2018, we assume that the SMETS1 meters are replaced by other SMETS1 meters. This reflects that suppliers were not

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[24] BEIS (2020), Smart metering implementation programme: consultation on DCC's provision of an enrolment service for EDMI SMETS1 meters; changes to DCC, electricity and gas supply licence conditions; and changes to the Smart Energy Code, Balancing and Settlement Code, and Uniform Network Code.
https://smartenergycodecompany.co.uk/download/21413/

rolling out SMETS2 meters at scale yet. For 2019, we assume the SMETS1 meters are replaced by SMETS2 meters.

3.167. We asked suppliers how these costs of replacing SMETS1 meters prematurely would evolve over time. Suppliers accepted that some issues raised may be less important in the coming years following successful enrolment of SMETS1 meters. Enrolment would remove the potential need for a SMETS1 meter to be replaced in order to maintain smart functionality when a consumer changes supplier, and suppliers should be able to remotely switch enrolled SMETS1 meters between payment methods. However, suppliers did state that other issues such as meter faults would still persist in the future.

3.168. We therefore consider that the proportion of SMETS1 meters incurring PRCs from 2020 for non-enrolment reasons will decline over time, but will not reach zero, due to meter faults.[25] We include a small residual proportion of SMETS1 meters incurring PRCs. We assume a linear decrease between 2019 (historical value) and 2021 (residual level).

3.169. We add the proportion of SMETS1 meters replaced for other reasons to the proportion replaced for failing enrolment. This gives the total proportion replaced prematurely, which feeds into the PRC calculation for each year.

Timing of enrolment

3.170. One supplier told us that the timing of meter replacements would be later than assumed, reflecting the schedule for the enrolment process.

3.171. We agree that we should delay the timing of SMETS1 meter replacements to reflect current plans for enrolment. (This is in line with the assumed profile used in the SMETS1 communications hub calculations mentioned above).

[25] We considered the possibility that this would create double counting against suppliers' operating and maintenance (O&M) costs. However, suppliers' responses to our RFI on O&M costs implied that these do not include the costs of replacement meters.

Avoided annuitised costs

3.172. We include an offset for the annuitised costs in subsequent years after incurring a SMETS1 PRC. This is for the same reason as for traditional meters (see above).

Calculation issues

3.173. Suppliers also made several points about how we had calculated SMETS1 PRCs.

- In the October 2019 consultation, we proposed to use a profile of SMETS1 asset costs over time – this was based on the prevailing cost for the year in which we were calculating the PRC. (For example, to calculate the PRC for a SMETS1 meter in 2017, we used the meter asset and installation costs for a SMETS1 meter in 2017). One supplier told us that the approach to calculating the asset and installation costs was incorrect, because meters removed would have the asset cost of earlier years. The implication was that we should use the asset and installation costs for the year the meter was actually installed.

- One supplier said that we should also include PRCs for SMETS1 communications hub costs (in addition to meter asset and installation costs).

- One supplier said that our calculation of how asset costs contribute to SMETS1 PRCs did not feed into the final results.

3.174. In relation to the calculation points made by suppliers:

- **Asset and installation costs:** The purpose of a PRC is to cover the remaining asset and installation costs which have not been recovered through annual rental payments. The value of the PRC should therefore depend on the costs originally incurred – not the prevailing costs at the time the meter is replaced. We therefore agree that this was an error, and have corrected this for SMETS1 meters.[26]

[26] We do not correct for this in relation to traditional meters, because the asset and installation costs feeding into the PRC calculation are assumed to be flat over time.

- **Communication hub costs:** We agree that SMETS1 communications hub costs should be included as part of the PRC calculation. We have made this change.

- **Asset costs feeding into PRCs:** We have corrected the error so that asset costs feed into the calculation of SMETS1 PRCs.

3.175. We have spotted an additional calculation point. The SMETS1 PRC calculation includes installation costs. In the October 2019 consultation, we used single fuel installation cost figures as the input costs. We did not include the separate dual fuel efficiency element of installation costs. This means that we were not taking into account that some SMETS1 meters would have been installed as part of a dual fuel installation, at a lower cost. We therefore propose to make this change, so that the PRC better reflects the costs incurred of installing meters.

Considerations – PRCs for SMETS2 meters

3.176. One supplier told us that meter replacements when customers switch supplier may be required for SMETS2 meters as well as SMETS1 meters, due to issues such as incompatible firmware or non-functioning communications.

3.177. We have maintained our previous approach in this area, and do not propose to include PRCs for SMETS2 meters. While there have been technical issues for SMETS2 meters (eg around communications), these are being addressed. There should not be a need for significant numbers of replacements for these reasons.

3.178. A small fraction of SMETS2 meters may generate PRCs due to meter faults. Given the expected low materiality, we consider this as part of our review of uncertainty, rather than in the SMNCC model itself.

DCC related costs

3.179. These costs are included in the pass-through SMNCC allowance, so they are not in the scope of this review.

IT systems costs

Overview of our approach

3.180. We expect suppliers to incur additional IT costs related to the smart meter rollout, over and above the expenditure they would have incurred without the smart meter rollout. We recognise three groups of IT system costs:

- amortised investment in hardware and software, excluding enrolment
- amortised investment in enrolment costs (the costs suppliers are expected to incur to enrol SMETS1 meters in the DCC)
- ongoing operating expenditure.

3.181. We propose to include IT capital expenditure based on a 2019 request for information (RFI) to suppliers. We propose to amortise this over five years, starting from the year after the investment was made. For future years, we propose to reduce IT capital expenditure over time. The changes to our approach from the October 2019 consultation are: to remove certain additional capital expenditure items taken from the 2019 CBA (relating to Smart Energy Code (SEC) registration and security), and to update the customer numbers in the calculation of the DCC adaptor service IT cost, which applies to smaller suppliers.

3.182. We propose to take the IT costs for enrolment and adoption from the 2019 CBA, and to amortise them using the same approach as for capital expenditure.

3.183. We propose to include IT operating expenditure from a separate (2020) RFI to suppliers. This is a change from our approach in the October 2019 consultation, where we proposed to set IT operating expenditure as 15% of the Net Book Value of the capital expenditure (for both historical and future costs).

Overview of suppliers' responses to the October 2019 consultation

3.184. Suppliers made few comments on the overall approach to capital expenditure, but some raised concerns about particular aspects of the calculation. One supplier said that the source for the assumed relationship between capital expenditure and operating expenditure was unclear.

Considerations – amortising IT investment

3.185. We have generally maintained our previous approach in this area. The only changes to our approach from the October 2019 consultation are: to remove certain additional capital expenditure items taken from the 2019 CBA (relating to SEC registration and security), and to update the customer numbers in the calculation of the DCC adaptor service IT cost, which applies to smaller suppliers. All else being equal, these changes will reduce our assessment of the efficient net costs to suppliers (although they will increase the change in net costs since 2017).

Amortising IT investment – general approach

3.186. The SMNCC allowance affects tariffs, so we must consider revenue and expenses. This means we need to consider the amortised costs of capital investment in hardware and software, and in enrolment costs.

3.187. We propose to amortise IT costs over five years, starting in the year after the capital expenditure occurred. In response to the October 2019 consultation, one supplier supported using the data from suppliers on IT costs, as well as the five-year assumption for the amortisation period.

3.188. The 2019 CBA amortises all IT capital investment over five years. We consider this a reasonable and conservative generalisation.

- We take as a starting point, that suppliers should amortise capitalised costs over the duration of an asset's economic life. The principle is that the cost of the asset and the revenue generated from that asset should be compared over the same period. The 2019 CBA expects suppliers to use these assets (on average) for longer than five years. In practice, it is common to amortise an asset over a period that is shorter than its actual life. Suppliers cannot be certain about how long an asset will last (particularly a new technology). Accounting standards are deliberately conservative with respect to estimating asset lives. For that reason it is common for companies to use an asset after they have fully amortised the capital investment. Amortising an asset over a period that is shorter than its life squashes the capital costs into the early stages of the asset's life, disproportionately increasing the amortised cost for those years.

- We also consider that it is desirable to reflect the amortisation periods that suppliers (on average) use. The 2019 CBA amortises over five years[27] and our inquiries suggest this is a reasonable, if conservative, approximation of the average approach. Most suppliers amortise assets over a similar period, or longer. Approaches vary depending on each supplier's approach and their assets. We select a single simplified approach around which individual suppliers will inevitably vary.

3.189. The 2019 CBA amortises costs from the first day of the year they are capitalised. We propose to modify this approach, amortising costs from the first day of the year *after* the capital expenditure. This is the approach we proposed in the October 2019 consultation. In response, one supplier said that there could be a longer lag between an investment and the start of amortisation than we had assumed.

- We take as a starting point that a supplier should start to amortise costs when an asset comes into use. Broadly, a supplier may start using an asset immediately, or after a development period (where capital costs are incurred, but not amortised until later when development finishes). In the first case amortisation is immediate. In the latter case there is lag between incurring capital additions and the cost being amortised. Suppliers have both types of expenditure so, on average, amortisation will slightly lag capital additions.

- The average lag will vary from supplier to supplier, depending on their specific mix of assets, their approach to managing IT, and their accounting policies. Our assumption necessarily produces a generalised cost profile, around which suppliers will vary. The profile may not match each or any suppliers' costs and each supplier's average lag will differ to various extents. We do not consider it necessary or proportionate to audit each asset case by case to establish the average lag for each supplier in each year.

3.190. Our proposed approach to amortisation is a simplified and general approach; individual suppliers will have different policies. Taking together the amortisation period and the

[27] Previous CBAs amortised over a longer period.

recognition date, we consider the combined effect appropriate to account for average IT costs. We take into account its conservativism in our review of uncertainty.

Amortising capital investment in hardware and software, excluding enrolment

3.191. The 2019 CBA explains that it bases IT capital investment in hardware and software by large suppliers on a 2010 RFI. In response to our April 2019 consultation, suppliers suggested that we collect recent data on their reported IT investments, to compare with the costs in the 2019 CBA. Table A2 shows the annual IT capital investment suppliers reported in our RFI, broken down between smart meter related costs and non-smart meter related costs.

3.192. One supplier said that it had not seen a reduction in IT costs. We recognise that not all suppliers may have seen the same decrease in smart meter IT investment in recent years – but our figures reflect the overall pattern, based on actual data across suppliers.

3.193. Suppliers also submitted forecasts of future investment. On average, the forecasts show a 33% reduction in capital investment each year from 2018. This is a simplified average of suppliers' submissions.

Table A2: Suppliers' reported capital investment in hardware and software, excluding enrolment (£ per account)

Costs	2010	2011	2012	2013	2014	2015	2016	2017	2018
Smart IT	0.88	0.77	2.07	2.85	3.69	3.54	3.90	3.09	2.20
Non-smart IT	7.78	6.38	7.28	5.72	4.51	3.04	1.28	2.16	3.47
Total IT	8.65	7.15	9.35	8.57	8.20	6.58	5.17	5.25	5.66
Smart %	10%	11%	22%	33%	45%	54%	75%	59%	39%
Non-smart %	90%	89%	78%	67%	55%	46%	25%	41%	61%

Source: Ofgem RFI data, 2019.

Notes: Prices are in nominal terms. The numbers above are only a subset of the IT costs in the SMNCC model - they include supplier hardware and software capital expenditure (excluding enrolment). The SMNCC model includes additional IT costs (eg supplier operational expenditure, DCC adaptor services and enrolment).

3.194. IT hardware and software upgrades are a common aspect of any business, so the 2019 CBA must isolate the additional investment due solely to the rollout (ie the costs incurred over and above the costs that would have been incurred anyway). For example, whether or not the smart meter rollout had happened, suppliers would have to replace or upgrade their billing systems. Due to the smart rollout, a supplier may upgrade their billing system earlier than planned, or add more functionality than it would have done otherwise. In those circumstances, the reported cost of those IT upgrades is not purely the additional cost of smart meters – it is a mixture of additional expenditure, and costs that would have been incurred without the smart meter rollout.

3.195. It is inherently difficult to isolate additional investment on IT from the counterfactual investment that would have happened anyway.

- Table A2 shows the IT investment that suppliers allocate to smart meters has increased during the rollout, as would be expected.

- Table A2 also shows that *total* IT investment reported by suppliers has declined between 2010 and 2017.

3.196. Even allowing for the cyclical nature of IT investment, it seems unlikely that the *reported* investment in smart metering is solely additional expenditure. If the costs that suppliers *report* for smart meters were purely additional that would mean that, absent the smart meter programme, their costs would have reduced by around 75% between 2010 and 2017 (ie suppliers collectively would invest only one quarter of the amount they invested at the beginning of the decade).

3.197. This difficulty isolating the additional expenditure is not a criticism of suppliers for the data they have provided. We recognise that suppliers have submitted data which reflects their business activities. Rather, it is an inherent challenge of considering counterfactual costs. This is a key reason why the 2019 CBA uses the source that it does. It has a more reliable estimate of *additional* investment.

3.198. Compared with the 2019 CBA, our review is not as exposed to the allocation of IT costs between counterfactual and additional expenditure. The operating cost allowance already includes an efficient allowance for suppliers' operating costs in 2017. On that basis, it is irrelevant what proportion of those costs in 2017 is allocated to the smart meter rollout and what proportion is not. The total costs included in the operating cost allowance would remain the same.[28]

3.199. For our purposes, we are interested in the *trend* in additional amortised costs related to smart meters, not the absolute level of expenditure.

- Table A3 shows our estimate of the absolute amortised hardware and software costs. This uses suppliers' reported capital investment and the amortisation approach we propose above. These amortised costs are affected by the difficultly in distinguishing between reported costs and purely additional costs.

- Table A4 shows the *trend* since 2017, in the amortised costs that suppliers report: for smart meters, for non-smart meter related systems and for total costs.

3.200. The trend in *reported* smart metering costs would only be appropriate if it reflected the trend in genuinely *additional* costs. We consider the trend in *reported* smart metering IT costs likely overstates the trend in *additional* amortised IT costs related to smart. This is because the pattern of smart meter related and non-smart meter related capital investment shown in Table A2 above suggests that the increase in reported smart costs (at least in part) reflects an increasing proportion of counterfactual costs that have been (mis)allocated as additional smart meter related costs.

[28] The SMNCC model uses average reported IT costs in its calculations, but only to calculate the trend in amortised costs since 2017 for the purpose of setting the SMNCC allowance.

Table A3: Amortised hardware and software IT costs, excluding enrolment (£ per account)

Amortised costs	2015	2016	2017	2018	2019	2020	2021	2022	2023
Smart	2.49	3.12	3.87	4.10	3.94	3.43	2.84	2.07	1.44
Non-smart	7.62	6.45	5.22	4.00	3.47	3.37	3.74	4.59	5.27
Total	10.10	9.57	9.09	8.10	7.41	6.80	6.57	6.65	6.71
Smart %	25%	33%	43%	51%	53%	50%	43%	31%	21%
Non-smart %	75%	67%	57%	49%	47%	50%	57%	69%	79%

Source: Ofgem RFI data, 2019.

Notes: Prices are in nominal terms. We hold future (post 2018) total IT capital expenditure constant. The numbers above are only a subset of the IT costs in the SMNCC model - they include supplier hardware and software capital expenditure (excluding enrolment). The SMNCC model includes additional IT costs (eg supplier operational expenditure, DCC adaptor services and enrolment). Amortised using a consistent approach with the SMNCC model.

Table A4: Trends in amortised hardware and software IT costs (excluding enrolment) since 2017 (£ per account)

Amortised costs	2017	2018	2019	2020	2021	2022	2023
Smart	0.00	0.24	0.07	-0.43	-1.03	-1.80	-2.43
Non-Smart	0.00	-1.22	-1.75	-1.86	-1.49	-0.64	0.05
Total	0.00	-0.99	-1.68	-2.29	-2.52	-2.44	-2.38
Difference between smart and total	0.00	1.22	1.75	1.86	1.49	0.64	-0.05

Source: Ofgem RFI data, 2019.

Notes: Prices are in nominal terms. The numbers above are only a subset of the IT costs in the SMNCC model - they include supplier hardware and software capital expenditure (excluding enrolment). The SMNCC model includes additional IT costs (eg supplier operational expenditure, DCC adaptor services and enrolment).

3.201. Rather than the trend in reported smart costs, we have considered using the trend in total IT costs since 2017 as a proxy for the trend in additional IT costs related to smart meters. This approach would require an assumption that counterfactual costs are stable over time, so that all of the changes in *total* costs reflect the real changes in solely additional IT costs related to smart meters. That would mean the reported reduction in non-smart meter related costs reported in Table A3 is, in fact, an increasing re-allocation of counterfactual costs as additional smart meter related costs.

3.202. While counterfactual IT costs may be stable in the long run, in short periods (such as the one we are analysing), investment is cyclical. Given the high investment in 2010 to 2012, it is possible that investment would increase again in the early 2020s. We consider it possible that counterfactual costs genuinely reduced (to some extent) between the early part of the decade and 2017.

3.203. We expect that the true trend in solely additional IT costs is between the trend in *reported* IT costs allocated to smart meters and the trend in *total* IT costs, but it is uncertain exactly where the true trend lies. We have considered picking a point in between these two trends (eg exactly halfway between). We have also considered freezing costs in 2018 and 2019 at the level reported for smart meter related costs in 2017 (neutralising the increases) and then reducing the SMNCC allowance in line with the trend in reported smart meter related costs from 2020. These approaches would better protect customers and reduce overestimating suppliers' costs.

3.204. None of these approaches will match the true trend in additional costs, which is inherently difficult to determine. Rather than adjust the input assumptions, we propose to use the data on IT costs that suppliers have allocated to smart meters and consider the impact of that conservatism when reviewing the output (potentially adjusting the SMNCC allowance in our review of uncertainty). Our allowance may be up to £3 or £4 per dual fuel customer higher than in should be (depending on the year, see Table A4).

Calculation points for IT capital expenditure

3.205. One supplier raised various issues with the calculations for IT capital expenditure. It said that optimism bias had not been included for the IT capital expenditure. It said that, for security costs, optimism bias had been applied to both historical and forecast costs, whereas it should only have been applied to forecast costs. It said that the partial data for suppliers and over time meant that the results were subject to a wider margin of error, and any trends could be the result of changes in the suppliers included over time. It also said that suppliers had provided different levels of detail in responses.

3.206. We have considered the calculation points raised.

- We have now corrected the model to apply optimism bias to IT capital expenditure.

- We have removed SEC registration and security solution costs from the SMNCC model (see below), and so the point about optimism bias for security costs is no longer relevant.
- We have fairly consistent data availability from the large suppliers, who represent the majority of costs. We therefore do not consider that partial data availability is likely to be a material source of bias.
- We do not have concerns about the level of detail provided by suppliers overall. Furthermore, as we are interested in trends in costs, provided each supplier has been consistent in its own approach between years, its cost trends should be appropriate.

DCC adaptor services

3.207. The SMNCC model includes the cost of DCC adaptor services (a form of IT cost). This cost is assumed to apply to non-'Big Six' suppliers.[29]

3.208. We first need to consider whether to include this cost category at all. The original scope of BEIS's data gathering on IT costs related to 'Big Six' suppliers only. BEIS then added the cost of DCC adaptor services to account for the rest of the market.[30] Our recent IT data gathering covered mid-tier suppliers as well as large suppliers. We also uplifted the IT costs to scale them up to an estimate of the total market IT costs. In theory, there could be less need for a specific DCC adaptor cost at all in our SMNCC model, compared to the 2019 CBA.

3.209. However, the current cost assumptions for the DCC adaptor service suggest that smaller suppliers incur higher average costs than mid-tier suppliers. It therefore might not be robust to assume that the average costs of large and mid-tier suppliers are representative of the market as a whole (and therefore that the scaled up IT costs are sufficient to cover the IT costs of all suppliers). We therefore consider that we should

[29] We use the same term as in the 2019 CBA model.
[30] BEIS (2016), Smart meter roll-out cost-benefit analysis. Part II – technical annex, pp 13-14. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/567168/OFFSEN_2016_smart_meters_cost-benefit-update_Part_II_FINAL_VERSION.PDF

still include the DCC adaptor cost – but that this is a source of conservatism in our review of uncertainty.

3.210. Two elements of the DCC adaptor cost are partly based on the distribution of customer accounts between suppliers of different sizes. The customer account figures in the 2019 CBA model date from 2015. They therefore do not reflect the current market share breakdown between suppliers of different sizes – particularly the growth in non-'Big Six' suppliers. They may therefore understate the costs incurred, given that the DCC adaptor service only applies to the non-'Big Six' suppliers. We therefore propose to update these customer account figures using more recent market share data.

3.211. We note that small suppliers generally have few default tariff customers (and some may not price their default tariffs at the cap). It is therefore possible that the additional costs of DCC adaptor services do not represent a cost that is incurred <u>in relation to default tariff customers</u>.

3.212. Our approach in the SMNCC model is to look at the overall costs of the rollout, rather than trying specifically to model the costs for default tariff customers. We therefore do not take a different approach for the DCC adaptor costs. However, as a general point, we note that the SMNCC allowance is not tailored to the cost of serving default tariff *customers. We discuss this further in our review of uncertainty.*

Amortising DCC enrolment and adoption costs

3.213. The 2019 CBA also provides additional funding for the costs suppliers are expected to incur to enrol SMETS1 meters in the DCC.[31]

3.214. We propose to use the capital costs in the 2019 CBA, and amortise them using the approach we discuss above. The amortisation period starts in 2019, which is when suppliers began enrolling SMETS1 meters with the DCC.

[31] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019, pages 28-29: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

Considerations – IT operating costs

3.215. In response to the October 2019 consultation, one supplier said it was unclear where the assumption that IT operating expenditure was 15% of capital expenditure came from.

3.216. We have gathered data on suppliers' IT operating expenditure. We have changed our approach from the October 2019 consultation to use this data. As a by-product of this RFI, we have also removed the SEC registration and security elements of both capital expenditure and operating expenditure. All else being equal, this data will reduce our assessment of the efficient net costs to suppliers.

IT operating expenditure

3.217. We propose to use suppliers' data to set the IT operating expenditure in the SMNCC model for 2017 to 2019. For 2020 and onwards, we assume a 25% year-on-year decrease in smart IT operating expenditure.

3.218. We collected information on the smart IT operating expenditure suppliers actually incurred. Overall, we received a full set of data from the majority of larger suppliers, and we consider the data is reliable. We consider that the new data is a better alternative to our previous modelled approach when calculating the smart IT operating expenditure.

3.219. Our modelled approach, presented in our October 2019 consultation, implied a relationship between IT capital and operating expenditure. (Operating expenditure was 15% of the Net Book Value of capital expenditure). Replacing our modelled approach with supplier data means that relationship might no longer exist.

3.220. There are a range of circumstances where operating expenditure might not directly relate to capital expenditure. For example, there might be system changes that are capitalised but do not need ongoing (expensed) maintenance. There could also be expensed costs that do not relate to any capital expenditure. We therefore do not see an issue with removing that relationship assumed in our previous proposals.

3.221. We assume that costs will decrease by 25% year-on-year. There was mixed information from suppliers on future costs. We consider costs will decrease as the rollout progresses and enrolment takes place. The completion of system changes to support enrolment and adoption will reduce the scope of suppliers' IT activities. We propose a decrease of 25% each year. This is conservative compared to the 33% decrease we assume for IT capital expenditure but more aggressive than holding future costs fixed. However, we will apply optimism bias to future values, and we note uncertainty around our estimate in the review of uncertainty.

SEC registration and security solution costs

3.222. We propose to remove the SEC registration and security solution costs from the IT costs elements (both capital and operating expenditure) of the SMNCC model. We consider that keeping them in the SMNCC model will lead to double counting.

3.223. In our February 2020 RFI, we asked suppliers to highlight where their smart IT operating expenditure related to SEC registration and security costs. Suppliers were largely unable to separate these costs within their IT cost data. We identified two explanations for where SEC registration and security solution costs are captured:

- costs are included within smart IT operating and capital expenditure, within the reported cost line breakdowns (ie included in the data provided in response to our RFIs); or
- costs are not captured under IT system costs but elsewhere (eg one supplier said it incurred costs for an audit relating to SEC registration, but did not record this in its RFI response as it was not charged under IT system costs).

3.224. We believe the first scenario is likely to be the case. SEC registration and security solution costs are captured within the smart IT capital and operating expenditure submissions. Therefore, to avoid double counting SEC registration and security solution costs, we propose to remove them.

Operating and maintenance

Overview of our approach

3.225. The 2019 CBA assumes an annual operating and maintenance (O&M) cost for smart meters of 2.5% of the meter purchase cost. These costs are associated with replacing equipment if found to be faulty. This assumption is based on information validated by MAPs covering around 20% of the smart metering market.

3.226. We propose to replace the 2019 CBA assumption with figures calculated from our own information request. This is a change from the approach we proposed in the October 2019 consultation.

Overview of suppliers' responses to the October 2019 consultation

3.227. Suppliers said that costs were higher than assumed, and that the check with MAPs had not covered enough of the market.

Considerations

3.228. We gathered data in this area. We propose to change our approach to include this data. All else being equal, this will increase our assessment of the efficient net costs to suppliers.

Scale of O&M costs

3.229. One supplier told us that the assumption should be higher. It said that MAPs would not see all visits to the meter. It said that its own costs were higher. One supplier said that we should ask MAPs ourselves, on the grounds that the check did not cover enough of the MAP market to be representative.

3.230. We gathered data from suppliers to validate this assumption. This suggests that O&M for a smart meter costs more than O&M for a traditional meter – both in absolute and percentage terms.

3.231. However, the net O&M cost of smart metering needs to take into account the counterfactual O&M costs of traditional meters. The correct comparison involves looking at the <u>incremental</u> O&M cost for smart meters relative to traditional credit meters.[32] Our analysis suggests that the O&M costs <u>suppliers</u> incur appear broadly in line with the 2019 CBA assumption for gas, but are significantly higher than the assumption for electricity.

[32] This involved taking the difference between the two absolute costs, and dividing through by the weighted average cost of smart meters installed up to and including 2019. We converted these into 2019 prices (using the GDP deflator), for comparison with the 2019 O&M costs.

3.232. We also tried asking MAPs about the O&M costs they incur – but received a very limited response. We asked suppliers what O&M costs they did or did not have visibility over. Most of the suppliers included in our calculations said that they had visibility of O&M costs. We can therefore have a degree of confidence that the O&M cost figures suppliers provided are reasonably comprehensive.

3.233. The data we have from suppliers is more recent than the information from MAPs BEIS used to validate its existing assumption. We therefore propose replacing the existing assumption with our revised data. Given we collected our data in absolute terms, it is simpler to include the results in the SMNCC model in absolute terms (rather than converting into a percentage).

Legal and organisational costs

Overview of our approach

3.234. Suppliers incur a variety of legal, institutional and organisational set-up costs for the smart meter rollout. The 2019 CBA assumes these costs relate to setting up the smart meter programme between 2013 and 2017. These costs are not incurred after 2017 in the 2019 CBA, except for a small amount of industry governance costs. Therefore these costs reduce the SMNCC allowance, which recognises *changes since 2017*. In response to our April 2019 consultation, suppliers requested that we collect data on legal and organisational costs.

3.235. In line with the October 2019 consultation, we propose to freeze legal and organisational costs at the 2017 level stated in the 2019 CBA.

Overview of suppliers' responses to the October 2019 consultation

3.236. One supplier said that it agreed with our proposal.

Considerations

3.237. We propose to maintain our approach from the October 2019 consultation.

3.238. Using the RFI data we collected, we have considered three options: using the assumption in the 2019 CBA, flat-lining costs at the 2017 level (meaning no reduction in the SMNCC allowance), and replacing the 2019 CBA assumption with recent data from suppliers.

3.239. In their RFI responses, suppliers have not drawn a distinction between set up costs and ongoing costs. This is a risk for the 2019 CBA, which must have a robust understanding of counterfactual and additional costs. For our purposes, the SMNCC allowance is less exposed to the counterfactual as costs in 2017 (whether allocated to counterfactual or additional costs) are already accounted for in the operating cost allowance.

3.240. The RFI data suggests a slight reduction in costs since 2017 (reducing the SMNCC allowance), including reducing costs for four of the largest six suppliers, and flat costs for one other.[33]

3.241. We propose to freeze legal and organisational costs at the 2017 level stated in the 2019 CBA. From 2018 onwards this is higher than the costs in the 2019 CBA, and is higher than the declining trend in suppliers' data. However, due to uncertainty around these costs in future (and that the post-2020 policy framework may differ from current arrangements) we consider this a reasonable and prudent approach to these costs. We take this into account in our review of uncertainty.

Pavement reading inefficiency

3.242. See avoided site visits in Chapter 4.

Marketing costs

Overview of our approach

3.243. Suppliers may incur marketing costs from encouraging customers to take up smart meters.

[33] As the operating cost allowance already contains suppliers' efficient costs (including smart metering costs), we are interested in the trend in these costs. We are less sensitive to whether reported level truly reflects additional costs or includes some of the counterfactual costs.

3.244. We propose to include the marketing costs from suppliers' data for 2017 and 2018. For future years, we propose to freeze the 2018 figure in real terms. We propose not to include spill-over benefits from smart meter marketing. We have not changed this approach from the October 2019 consultation.

Overview of suppliers' responses to the October 2019 consultation

3.245. Suppliers provided limited comments in this area. One supplier raised a concern that marketing costs could be higher in future years.

Considerations

3.246. We propose to maintain our approach from the October 2019 consultation, for the reasons below.

Different types of marketing costs

3.247. One supplier said that we had excluded costs from our RFI analysis on the basis of being SEGB or ASR related. It said including these would increase costs.

3.248. The cost of marketing the smart meter rollout (including the charges for the services provided by SEGB) is already accounted for in the pass-through SMNCC allowance. SEGB is the body running the nation-wide marketing campaign for smart meters and is funded by suppliers. Therefore these costs are outside the scope of this review.

3.249. Appointment setting costs (including the cost of direct mail to customers) are already included in installation costs, based on suppliers' ASR submissions. Therefore, we do not seek to consider these costs again, which would double count costs.

3.250. The 2019 CBA does not include additional marketing costs – other than SEGB marketing costs and appointment setting costs. In response to a number of our consultations, suppliers argued that they incur further marketing costs beyond these. They requested that we gather additional information to assess the reasonableness of the 2019 CBA approach.

3.251. We issued an RFI and collected data on:

- **Reported marketing costs, related to smart meters:** suppliers provided data on the costs they incur marketing smart meters, excluding SEGB charges, and excluding appointment setting costs (which we already include in installation costs).

- **Counterfactual marketing costs:** we asked suppliers to estimate the marketing costs they would have incurred without the rollout. For instance, if smart meter information is included in a campaign that would have occurred anyway.

- **The benefits of marketing:** The benefits of marketing are inherently difficult to quantify accurately, but clearly there are benefits to the company from marketing. We asked suppliers to estimate the benefit they derive from smart meter marketing, and to describe how they assess the benefits of marketing generally.

3.252. Suppliers report that they incur costs marketing smart meters, although these costs are relatively modest (Table A5 below). The costs largely relate to direct communication with customers to encourage them to get a smart meter.[34]

Benefits of smart meter marketing

3.253. One supplier said that it agreed with our proposal, but did not consider that this might overstate actual costs as stated in the October 2019 consultation.

3.254. The benefits of smart meter related marketing are difficult to quantify. Suppliers usually expect the benefits of their marketing activity to exceed its costs. Some suppliers considered that they could estimate the benefits of smart-related marketing credibly; others did not. Where suppliers estimated the benefits, they tended to be somewhat less than the level of benefits they target for other advertising. Others felt that there were no financial benefits.

[34] To avoid double counting, within these estimates, suppliers excluded costs for activities they include in appointment setting costs. We included appointment setting costs separately in the RFI for completeness, but always intended to exclude them to avoid double counting.

3.255. An efficient supplier would derive some benefits from its marketing. However, in the context of smart meters, it is credible that the financial benefits may be lower than would be expected of normal marketing. The benefits of direct communication with current customers may not include brand awareness and the benefit of acquiring new customers that a standard marketing campaign might have. The primary benefit is encouraging customers to get a smart meter. Other benefits, such as increased customer retention and loyalty from direct communication, are much more challenging to establish (certainly the benefit to a supplier with *efficient and effective* marketing is more challenging to establish). However, we consider it possible that the financial benefits do not exceed the efficient costs of these marketing activities.

3.256. As a first step, we therefore propose to restrict benefits so that they do not exceed costs (ie the net *financial* benefit is zero at most).

3.257. As a second step, we consider what level of benefits to include. This could be between 0% of costs (ie where there are no benefits) and 100% of costs (ie where benefits are equal to costs, meaning that the net cost of marketing is zero). In line with suppliers' representations we propose to include no spill-over benefits from smart meter marketing (Table A5).

3.258. We consider this position may overstate true costs (because some or most suppliers will in fact enjoy financial benefits). We note that this uncertainty is not conservative; it would *reduce* the SMNCC allowance compared to including benefits at 50% or 100% of costs, which we considered. That is because the costs suppliers report peaked in 2017. As the operating cost allowance is based on total operating costs in 2017 (including smart metering costs), the level of marketing costs has no impact on the cap level. However, because suppliers report a reduction in these costs in 2018, that decline would reduce the level of the SMNCC allowance. If we assumed that there are no additional marketing costs at all (as the CBA does), or that level of additional costs is unchanged from 2017 levels (which are already included in the operating cost allowance) then the SMNCC allowance would be higher.

Projecting future marketing costs

3.259. One supplier said that the costs of consumer engagement are likely to increase as the rollout continues.

3.260. For marketing costs beyond 2018, we propose to freeze the 2018 cost in real terms. Costs should reduce as the rollout proceeds, as suppliers need to engage fewer customers. However each remaining customer may be harder to engage. On that basis, we hold the costs fixed, rather than reduce them. This approach may overstate costs, so is conservative.

3.261. We have not changed this position from the October 2019 consultation, notwithstanding the representations from one supplier. We had already considered similar points before the October 2019 consultation, in reaching the position we proposed in that consultation. Furthermore, the extent of any additional marketing action required by suppliers may depend on the post-2020 policy framework, which has not been established yet.

3.262. In our review of uncertainty we consider the impact of our treatment of marketing costs on the SMNCC allowance.

Table A5: Analysis of marketing cost data provided by suppliers

Aggregate	2014	2015	2016	2017	2018
Reported marketing costs (£m)	4.0	6.01	16.4	31.5	22.6
Assumed financial benefits (% of costs)	0%	0%	0%	0%	0%
Net cost (£m)	4.0	6.0	16.4	31.5	22.6

Source: Ofgem RFI (2019)

Notes: Prices are nominal. We scale costs to market level using the domestic meter points of the suppliers included in the sample and the total domestic meter points for each year.

Optimism bias

Overview of our approach

3.263. Optimism bias reflects that cost projections may turn out to be underestimates. We propose to set the optimism bias at 10% for forecast costs. This is a change to our previous approach in the October 2019 consultation, where we proposed to set optimism bias to 5% for forecast costs. We maintain our proposal of not applying optimism bias to historical costs.

Overview of suppliers' responses to the October 2019 consultation

3.264. The key comment in this area was made outside the October 2019 consultation. It noted that the HMT Green Book sets a minimum 10% level for optimism bias.

Considerations

3.265. We have changed our approach in this area for the reasons below. All else being equal, this will increase our assessment of the efficient net costs to suppliers.

3.266. When calculating costs for meter assets, IT systems (capital and operating costs), installation, and IHDs, the 2019 CBA model adjusts for optimism bias. The use of optimism bias is in line with HMT guidance.[35] Optimism bias reflects that cost projections may turn out to be under-estimates (eg due to unforeseen circumstances). The 2019 CBA accounts for optimism bias at 5% (except for supplier IT costs, where it is set at 10%). The 2019 CBA uses a single time-weighted assessment of costs, which we have modified (see earlier in this chapter). Therefore, its approach to optimism bias does not suit our review.

3.267. We propose to not apply optimism bias to historical costs. Applying optimism bias would straightforwardly overstate costs that have already occurred. (To the extent that actual costs have outurned higher than originally expected, this would be included in the data we use. We would not need to apply optimism bias to account for this possibility).

3.268. We propose to apply optimism bias to forecast data only. This is the most appropriate approach, because it reflects the purpose of optimism bias.

3.269. In a report about the 2019 CBA, an economic consultancy said that the 5% optimism bias used in the 2019 CBA is below the optimism bias range in the Green Book.

[35] HM Treasury, Green Book supplementary guidance: optimism bias.
https://www.gov.uk/government/publications/green-book-supplementary-guidance-optimism-bias

3.270. Unlike BEIS, we are only applying optimism bias to the forecast cost data in our analysis. We therefore need to consider the correct approach for these years in isolation.

3.271. The Green Book provides generic optimism bias values which can be applied where there are no organisation-specific estimates.[36] The 5% value we used is below the relevant lower bound from these generic values. (This lower bound is 10% for capital expenditure relating to equipment/development).

3.272. The forecast values we use in the SMNCC model may well be different to most of the forecast data in appraisals that follow Green Book guidance. Our forecast values are developed starting from actual data for a programme mid-implementation, rather than being forecasts developed at a business case stage. In theory, this could leave less room for uncertainty and optimism bias – some risks will already have materialised, and would therefore already be reflected in the historical cost data which we use as a starting point for forecasts.

3.273. We therefore consider that the optimism bias should be lower in principle than the lower bound from the Green Book. However, to be conservative, we propose to increase the optimism bias to 10% for all forecast costs. We take this into account in our review of uncertainty.

Meter recertification

Overview of our approach

3.274. The 2019 CBA assumes that a proportion of traditional meters are recertified to extend their life. In line with the October 2019 consultation, we propose to maintain the 2019 CBA assumption.

[36] Referred to in HM Treasury, Green Book, paragraph 5.45. The default values are set out in table 7. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf
Further information on the Green Book approach to optimism bias is available in the Green Book supplementary guidance.

Overview of suppliers' responses to the October 2019 consultation

3.275. Stakeholders did not comment on this area in response to the October 2019 consultation.

Considerations

3.276. We propose to maintain our approach in this area, for the reasons below.

3.277. The 2019 CBA model includes a recertification assumption. It extends the life of 20% of traditional meters in 2016 in the policy scenario only. This assumption delays when these traditional meters should be replaced. It covers the case where a traditional meter was due for replacement, but a supplier was unable to fit a smart meter for temporary reasons (eg Home Area Network issues). In this circumstance, it would have been more efficient for a supplier to extend the life of the existing traditional meter, rather than installing a new traditional meter (which would need to be replaced with a smart meter within a few years). One stakeholder queried this assumption in response to a previous consultation.

3.278. We propose to use the meter recertification assumption in the 2019 CBA model. The rationale is reasonable. It is also practicable. The 2019 CBA model assumes traditional meters have an even age distribution and expire after 20 years. In contrast, the meter age data we collected to calculate PRCs shows that traditional meters can remain in service much longer than this. The potential for extending a meter's life by five years beyond a 20 year assumed life therefore seems reasonable.

Restructuring costs

Overview of our approach

3.279. The SMNCC model includes various benefits which assume that a supplier can make operating cost savings as a result of smart metering (eg in relation to debt handling and customer enquires – see the benefits section in Chapter 4 for discussion of these). The model assumes that these benefits can be realised in line with the installation of smart meters, and that a supplier does not incur transitory costs to unlock these benefits. We have not changed our model in relation to this area, but we consider restructuring costs within our review of uncertainty.

Overview of suppliers' responses to the October 2019 consultation

3.280. One supplier told us that it will incur restructuring costs (redundancy payments) to realise cost savings. It told us that we should consider restructuring costs as part of our review of uncertainty.

Considerations

3.281. We have maintained our approach in this area.

3.282. In principle, there may be transitional costs associated with a supplier changing its operations. Any such costs may mean that a supplier takes time to receive the full benefits of smart metering.

3.283. When setting the operating cost element of the cap in November 2018, we excluded exceptional restructuring costs. This was on the basis that it would risk distorting our benchmark above an efficient level.[37]

3.284. In theory, there is a difference between exceptional costs that suppliers incur to reduce their own inefficiency, and exceptional costs that all suppliers (even those who start out as efficient) would need to incur to change their operations in response to smart metering. We would not include the former in our analysis, for the reasons discussed in our November 2018 decision. However, there could be a case for including the latter in theory.

3.285. In practice, there is unlikely to be a clear-cut distinction between smart metering restructuring costs and restructuring costs in general. Many of the areas where suppliers might make changes in response to the smart meter rollout could also be areas where suppliers would be seeking to make efficiency improvements anyway. This means that any restructuring costs could not be cleanly allocated to the smart meter rollout. If we allowed for restructuring costs, we might end up funding inefficient

[37] Ofgem (2018), Default tariff cap: decision. Appendix 6 – operating costs, paragraph 3.42. https://www.ofgem.gov.uk/publications-and-updates/default-tariff-cap-decision-overview

suppliers for general efficiency improvements. This would reduce protection for consumers.

3.286. We therefore do not consider that there would be reliable data we could gather in this area. In line with the supplier's suggestion, we instead consider the potential for restructuring costs as part of our review of uncertainty.

4. Modifying benefits

Section summary

Smart meters save suppliers money in some areas. We review the benefit categories in the 2019 CBA and consider whether we need to modify the approach for our review.

Summary

4.1. Alongside our October 2019 consultation, suppliers scrutinised the SMNCC model that underpinned those proposals. We have considered their views and made further enquiries. We discuss each benefit category below, setting out our approach and consideration of suppliers' views.

4.2. The major benefit categories are:

- Avoided site visits
- Customer switching
- Inbound customer calls
- Debt handling
- Reduced theft and avoided losses
- Remote Change of Tariff

Proportion of SMETS1 meters in smart mode

Overview of our approach

4.3. Smart meters can lose smart functionality. In particular, if a customer with a SMETS1 meter switches supplier, the gaining supplier may not be able to communicate with the meter. The 2019 CBA assumes that SMETS1 meters which lose smart functionality do not deliver benefits to suppliers.

4.4. We propose to amend the assumed number of SMETS1 meters losing smart functionality, so that it aligns with the latest data. This is a change from the approach we proposed in the October 2019 consultation.

Overview of suppliers' responses to the October 2019 consultation

4.5. Suppliers did not raise this issue in response to the October 2019 consultation.

Considerations – proportion losing smart functionality

4.6. We propose to amend our approach in this area, as set out below. All else being equal, this will increase our assessment of the efficient net costs to suppliers.

4.7. The SMNCC model includes an assumption for the proportion of smart meters losing smart functionality in each year. This assumption only applies to SMETS1 meters, before they are enrolled with the DCC. The SMNCC model assumes that smart meters without smart functionality do not deliver benefits – this assumption is therefore reasonably significant.

4.8. The current assumption delivers a figure of around 1.0m smart meters operating in traditional mode at the end of 2019. This is much lower than the latest figure published as part of the BEIS smart metering statistics. At the end of 2019, there were just under 4m smart meters operating in traditional mode.[38]

4.9. We propose to correct for this discrepancy by modifying the assumption, so that the stock of smart meters in traditional mode at the end of 2019 reflects the BEIS smart metering statistics. We calculate a scaler which delivers this, and apply this to the existing assumptions for all years.

4.10. The SMNCC model has a single enrolment trigger date, after which the stock of SMETS1 meters operating in traditional mode is assumed to drop to zero. We set this

[38] Note that this includes non-domestic smart meters.
BEIS (2020), Smart Meter Statistics in Great Britain: Quarterly Report to end December 2019, p5. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872155/2019_Q4_Smart_Meters_Statistics_Report.pdf

date to 2021, reflecting that the vast majority of SMETS1 meters should be enrolled by the end of this year.

Avoided site visits

Overview of our approach

4.11. Suppliers will avoid the cost of sending meter reading operatives to properties in order to read traditional meters. The savings to suppliers from avoided site visits is material; it is the largest benefit in the 2019 CBA. To estimate the savings from avoided meter readings, we must estimate the number of visits per year that suppliers would have carried out if they had not installed a smart meter.

4.12. We propose to calculate both the number of avoided meter reading visits and the cost of these visits using ASR data. This is a change to our October 2019 proposal, where we proposed to maintain the (higher) assumption from the 2019 CBA for the number of avoided meter reading visits.

4.13. We propose to maintain the 2019 CBA assumption that the remaining meter reading visits to traditional meters become more expensive (known as 'pavement reading inefficiency'). Suppliers will still need to visit smart meter premises occasionally to carry out safety inspections – we also apply pavement reading inefficiency to the cost of regular safety inspections.

Overview of suppliers' responses to the October 2019 consultation

4.14. The key comment was that we should not maintain the number of avoided meter reading visits assumed in the 2019 CBA.

Considerations – number of avoided visits

Number of avoided visits for meter readings

4.15. The 2019 CBA assumes that installing a smart meter allows a supplier to avoid 1.7 site visits for meter readings per year (on average). This value is half-way between the figure calculated using 2018 ASR data (1.4 visits per year), and the assumption from the previous CBA (2.0 visits per year). The 2019 CBA assumed that part of the reduction in site visits over time was due to the introduction of smart metering – in particular because the prospect of smart metering led to the removal of a requirement (the 'SLC12 obligation') to carry out a safety inspection every two years.[39]

4.16. One supplier told us that, for our purpose of estimating the change in costs since 2017, we should be using the number of visits calculated using ASR data. This is because the SLC12 obligation was removed before 2017, which forms our operating cost baseline.

4.17. We agree with this comment, and have modified our approach. The SLC12 obligation was removed before 2017. The costs suppliers were incurring in the 2017 operating cost baseline should therefore already include any reduction in site visit frequency as a result of removing the SLC12 obligation. Therefore, even though the smart metering rollout was a key driver of the removal of the SLC12 obligation, this is not relevant to our calculation of the change in smart metering benefits since 2017. We can therefore use the average number of site visits from the ASRs directly, rather than making any adjustments. (We use the value calculated using the 2019 ASR data). All else being equal, this increases our assessment of the efficient net cost to suppliers.

Number of avoided visits for safety inspections

4.18. Although suppliers will no longer need to take manual meter readings, they will still need to visit sites to perform safety inspections on smart meters. Currently these visits are usually performed together. For most meters (ie those not considered to be high risk), these visits will be required once every five years.

Other feedback

4.19. One supplier made a general comment that the assumptions relating to supplier benefits looked reasonable.

4.20. One supplier told us that avoided meter reading costs had been affected due to delays to the smart meter rollout, and that suppliers are incurring more meter reading costs for other reasons (eg back-billing risks).

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[39] The smart meter rollout was a critical factor in the removal of the SLC12 obligation. https://www.ofgem.gov.uk/ofgem-publications/97556/reformingsuppliersmeterinspectionobligationsfinalproposals-pdf

4.21. Our proposed methodology reflects data across the industry – the experience of individual suppliers may vary.

Considerations – costs of an avoided site visit

4.22. Like the 2019 CBA, we use suppliers' ASR data to calculate the average cost of a meter reading site visit. At a high level, we have maintained this approach from the October 2019 consultation.

Single fuel and dual fuel benefits

4.23. The 2019 CBA calculates the cost of a visit on a per meter basis (dividing the total cost by the total number of meters). Under that approach, the estimated benefit of avoiding a dual fuel site visit is twice the value of avoiding a visit to a site with a single meter.

4.24. While updating this assumption with the latest ASR data, we also amended it so that the cost of a meter reading visit is the same for a single fuel and a dual fuel customer. (Instead of dividing total costs by the number of meters, we divide through by the number of customers[40]). This reflects that costs should largely be the same for single fuel and dual fuel sites. For example, an installer will incur fixed costs of travelling between sites, whether they are going to visit a dual fuel or a single fuel site. This does not change the total size of the benefit – only the allocation between single fuel and dual fuel premises.

Cost difference

4.25. One supplier told us that the assumed cost of a meter reading visit was higher than its own figures.

4.26. As in general, a supplier's costs of a meter reading visit may differ from the average. This does not mean that the average is incorrect. We have calculated the costs based on ASR data provided by suppliers.

[40] This represents the number of premises that suppliers need to visit.

Considerations – site visit efficiency

4.27. We did not receive any feedback on this area in response to the October 2019 consultation. We are maintaining our proposal from the October 2019 consultation: to maintain the CBA position on applying pavement reading inefficiency to the cost of meter readings, and to adjust the cost of regular safety inspections for pavement reading inefficiency.

4.28. The CBA assumes that the benefit of avoided visits is partially offset by increasing inefficiency ("pavement reading inefficiency"). As more traditional meters are replaced with smart meters, the remaining meters will be further apart, taking more time (and cost) to read. The CBA accounts for this increasing inefficiency by applying an uplift to traditional meter reading costs (capped at twice the cost of a site visit) based on suppliers' data.

4.29. The CBA does not adjust the costs of future regular safety inspections, although it uses the same starting cost as for a traditional meter reading.

4.30. In principle, the efficiency of safety inspections should not change. At a point when all customers have smart meters, all meters will still need safety inspections. For a supplier, the distance between its smart meters would be the same as the distance between its traditional meters before the rollout. However, given the long time interval between safety inspections (five years), it may be more challenging for suppliers to plan their visits in a similarly efficient manner during the rollout. Suppliers' future plans are obviously uncertain and, at least at first, we would expect a wide variety of approaches, some of which may be very efficient and others quite inefficient.

4.31. We have considered whether it would be appropriate to modify the approach so it is more generous, such as including a proportion of the efficiency adjustment the CBA uses for meter readings.

4.32. We propose to apply the same efficiency adjustment to safety visits that the CBA applies to meter readings. This assumes that during the life of the cap, suppliers will be unable to rearrange safety visits so that they can be performed as efficiently as they currently are. This is a conservative assumption, as an efficient supplier should have some ability to rearrange its schedules. We consider this in our review of uncertainty.

4.33. We have already proposed to change the number of avoided meter readings, so that this reflects the current frequency of meter readings, rather than an average of the current and historical frequency of meter readings. However, the pavement reading inefficiency sheet in the SMNCC model has a separate input for the meter reading cost per year, which partly depends on the number of avoided meter readings. We therefore need to also change this for consistency.

Customer switching

Overview of our approach

4.34. Smart meters will deliver benefits when customers switch suppliers. The switching benefit in the 2019 CBA has three elements. The first element relates to smart metering reducing the cost of obtaining a change of supplier meter reading. The other two elements (from the DCC offering registration and data aggregation services) depend (at least in part) on the progress of the switching programme,[41] and therefore only take effect from 2022.

4.35. We propose to include the first benefit – but only for enrolled SMETS1 and all SMETS2 meters. We do not propose to include the second and third benefits. This represents a change from the October 2019 consultation, where we proposed not to modify the 2019 CBA assumptions in this area.

Overview of suppliers' responses to the October 2019 consultation

4.36. Several suppliers told us that we should not include the benefits which depend on the switching programme. One supplier also said that the benefit of using a smart meter for a change of supplier meter reading did not apply to gas (and therefore also not to dual fuel customers).

[41] The 2019 CBA assumes the latter point would also be dependent on changes to settlement arrangements.

Considerations – benefits related to the switching programme

4.37. Several suppliers told us that we should not include the benefits which depend on the switching programme. For example, one supplier said that we should only include these benefits if these were the net benefits to suppliers of the switching programme, taking into account the costs suppliers incur. It did not consider that this was the case, given that our switching programme RFI had asked for the net costs, and our switching programme Impact Assessment had concluded that there were costs to suppliers. Another supplier also said that we had assumed that the net costs of the switching programme were covered by the headroom allowance, so subtracting the benefits in the SMNCC would be double counting these benefits.

4.38. Given that our switching programme asked for information on net costs, and given we referred to the switching programme in the context of setting headroom, it is correct to remove this benefit to avoid double counting. We therefore propose to set the benefits which depend on the switching programme (the second and third elements of the switching benefit) to zero. All else equal, this increases our assessment of efficient net costs.

Funding of the faster switching programme

4.39. One supplier said that the funding for the DCC's costs of the faster switching programme might change in future (based on previous Ofgem statements). It said that we should commit to amending the cap methodology if necessary in future.

4.40. Should any changes to the DCC charging methodology be proposed in future, we would then be able to consider whether these could have implications for the pass-through methodology in the cap. We do not need to consider this point now.

Considerations – change of supplier meter reading benefit

4.41. The key comment was that the benefit of using a smart meter for a change of supplier meter reading did not apply to gas (and therefore also not to dual fuel customers).

4.42. We have amended this benefit so that it does not apply to non-enrolled SMETS1 meters. All else equal, this increases our assessment of the efficient net costs to suppliers.

Meters to which benefit applies

4.43. One supplier told us gas had not seen the same changes as electricity to use smart meter readings on change of supplier. It said that as this affected both gas only and dual fuel switches, the benefit from using automated meter readings should be set to zero.

4.44. We have considered to what extent customer switching benefits would accrue in the early phases of the rollout. During that time, few smart meters were interoperable (meaning that most meters would stop providing automated meter readings if a customer switched supplier). At present, the benefit comes from smart meters providing automated meter readings thus avoiding the cost to suppliers of obtaining a meter reading when a customer switches. The losing supplier knows the closing meter reading, reducing administration costs when closing the account and reducing difficulties in the switching process.

4.45. However, the situation may differ between fuels. For electricity, even though the gaining supplier may not be able to read the meter remotely itself (if the meter is not interoperable), it should still benefit from receiving (via industry data flows) the closing read taken by the previous supplier.[42] For gas, we understand that it is the responsibility of the gaining supplier to provide a reading, and that otherwise Xoserve uses an estimate.[43] If the gaining supplier cannot read the meter itself, then it would be unable to provide an automated meter reading.

4.46. We therefore consider that there may be some temporary issues for gas, in relation to SMETS1 meters which have not been enrolled with the DCC (and are therefore not fully interoperable). We accept the position that most switches are dual fuel, and therefore the existence of a cost saving relies on using remote meter readings in the switching process for both fuels. (If a supplier has to visit a site to carry out a change of supplier meter reading for one fuel, then this would have very similar costs to carrying out readings for both fuels). As a simplification, this would mean that there would be no cost savings for non-enrolled SMETS1 meters. This simplification is slightly conservative, because there would still be electricity only switches, and some cases

[42] In line with the process established by Balancing and Settlement Code modification P302.
[43] See for example section 1.1 of Schedule 11 to the Supply Point Administration Agreement.

where the gaining supplier is able to read the meter on change of supplier (eg if it also operates the same brand of meter).

4.47. We therefore propose to apply the automated meter reading benefit only to SMETS2 meters and enrolled SMETS1 meters. As these meters are fully interoperable, the gaining supplier would be able to take a remote change of supplier reading for gas, addressing the current issue.

Value of cost savings

4.48. One supplier said that the cost savings from suppliers providing automated readings on change of supplier were overstated.

4.49. The cost of a traditional meter reading comes from ASR data. A particular supplier may have lower costs than the average – as in general, this does not mean that the average is incorrect. We have updated this figure using the latest ASR data from suppliers.

Inbound customer calls

Overview of our approach

4.50. Smart meters provide suppliers with accurate billing information. This should reduce the need for customers to contact their suppliers to discuss errors.

4.51. We propose to include this benefit within our assessment. As proposed in our October 2019 consultation, we calculate this using the same methodology as the 2019 CBA.

4.52. At this stage of the rollout, it is uncertain how costs per call for customers with smart meter will evolve over time. The 2019 CBA therefore uses a combination of current data from suppliers and assumptions about future trends.[44]

[44] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019. Page 44. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

- **Volume of calls**: The 2019 CBA assumes that customers with a smart meter will call less often, in line with the trends in 2018 ASR data (about 60% lower than customers with traditional meters).

- **Cost per call**: Based on suppliers' ASR data, the 2019 CBA assumes a higher average cost per call in the first year after installation for a smart meter customer than for a customer with a traditional meter. In subsequent years, the 2019 CBA assumes that costs per call are the same for customers with smart meters and customers with traditional meters.

- **Lower fixed costs:** The 2019 CBA assumes overheads represent 15% of overall customer call costs for traditional meters (based on BEIS industry knowledge). It assumes that they decline alongside the costs of inbound enquiries, although more slowly (reflecting that these are overheads).

Overview of suppliers' responses to the October 2019 consultation

4.53. Some suppliers queried the reduction in call volumes and assumed cost savings. They said these did not correspond to their own experience.

Considerations

Call volumes

4.54. Some suppliers queried the reduction in call volumes. In particular, one supplier said that this did not control for the different characteristics of current smart metered customers compared to customers in general. Looking at two samples of its smart metered customers over time (before and after they received a smart meter), it told us that call volumes fell by a smaller amount in each sample.

4.55. We have considered the analysis presented by one supplier. We note that the figures relate to inbound contacts in general, whereas the ASR data only asked about inbound contacts relating to billing. Smart meters remove the need for estimated bills, and therefore should have a particularly large impact on contacts about billing.

4.56. More importantly, data gathering cannot show what reductions may be possible in future, if current smart metered customers differ from the population as a whole. The 2019 CBA model compares call volumes for traditional meter customers and current smart meter customers. This delivers a large reduction. The supplier's analysis compares call volumes for the current smart meter customers, before and after receiving a smart meter. This delivers a small reduction. The actual issue we are concerned with is how call volumes will change for customers in general after they receive a smart meter. This may not correspond to either figure. If the supplier is correct that current smart metered customers "are those who are likely to have lower contact costs even without a smart meter", then there may be greater scope for reductions in call volumes from other customers (who currently call more frequently). The reduction achieved in relation to current smart meter customers may therefore understate the reductions available for customers in general.

4.57. While we propose to maintain the 2019 CBA approach (updated using the latest ASR data), we recognise that there is uncertainty about how both call costs and call volumes will evolve over time as a wider group of customers receive smart meters. We use the information presented by one supplier to help us consider this as part of our review of uncertainty, although we place limited weight on the figures for the reasons discussed above.

Call costs

4.58. One supplier agreed with the assumption that call costs are higher in the first year after installation, due to longer calls. It said that the assumption that call costs are the same in subsequent years for smart meter and traditional meter customers might or might not be correct, and should be kept under review. One supplier also said that the cost savings assumed were materially higher than in its own experience.

4.59. We consider the CBA assumptions reasonable simplifications that will contain a degree of uncertainty. The CBA has increased the costs per call in the first year (compared to subsequent years), to reflect more complex calls following installation and less familiarity with the issues raised. As staff become more familiar with smart meters, in future this increase in costs may not be as great or may not last a full year. However, it is also possible smart meter customers may have fewer 'simple' calls, which would offset that impact to some extent.

Debt handling

Overview of our approach

4.60. Smart meters provide suppliers with more frequent, accurate consumption information. This allows them to reduce the costs of handling bad debt and payment in arrears (administrative costs and financing costs, such as working capital).

4.61. The 2019 CBA includes a set of inter-related benefits to suppliers from using smart meters to help them manage debt. We propose to include the benefit from earlier identification of debt issues (and the consequential benefits in other areas), but not the benefit from billing standard credit customers more frequently. This is a change from our October 2019 consultation, where we proposed to include the full set of benefits used in the 2019 CBA.

Overview of suppliers’ responses to the October 2019 consultation

4.62. The main points from suppliers’ responses were that we should take the costs of more frequent billing into account, and that it would not be straightforward to switch meters to prepayment mode remotely (part of the earlier identification benefit).

Considerations – more frequent billing

4.63. A key element of the total debt handling benefit comes from moving standard credit customers from quarterly to monthly billing.

4.64. Suppliers said that we should take the costs of more frequent billing into account, and that billing standard credit customers more frequently was possible without a smart meter.

4.65. We have collected data on the costs of more frequent billing. In light of this, we have removed this element of the total debt handling benefit. All else being equal, this increases our assessment of the efficient net costs to suppliers.

Feasibility without smart metering

4.66. One supplier said that it agreed that monthly billing would reduce working capital costs, but that suppliers could already take this step (ie before the introduction of smart meters). It therefore said that this element of the benefit should be discounted.

4.67. Smart meters are not a prerequisite for offering monthly billing. However, they do make it easier for suppliers to offer accurate monthly bills, without requiring estimates or expecting customers to take regular readings themselves (which may only be possible among more engaged customers). We therefore consider that more frequent billing could in principle therefore be a benefit unlocked by smart metering.

Costs of more frequent billing

4.68. One supplier said that the debt handling analysis does not take into account the costs suppliers would face from carrying out this change. These were increased contact costs (particularly for customers who receive paper bills) and billing system upgrades.

4.69. We have gathered data from suppliers on the cost of moving from quarterly to monthly billing for standard credit customers with traditional meters. This included a breakdown of the cost of moving paper and paperless customers to monthly billing. Given that many suppliers had not carried out this step, many of the responses were forecasts rather than actual data.

4.70. We gathered data on both fixed setup costs and ongoing variable costs. The fixed setup costs were relatively small in aggregate, although varied significantly between suppliers. However, the variable costs alone were larger than the benefits of more frequently billing. Again, there were significant differences between suppliers. This may partly reflect differences in the number of impacts that different suppliers considered. The main cost categories included: the cost of sending more bills to customers who receive paper bills, increased customer contacts in response to bills, and the cost of processing billing complaints.

4.71. We propose to remove the element of the debt handling benefit relating to monthly billing. This reflects that there are costs which a supplier would reasonably incur as a consequence, and these costs appear to exceed the benefits (although we note that the data has some limitations). It also reflects our understanding of the extent to which suppliers intend to carry this out in practice.

Considerations – earlier identification of debt issues

4.72. The 2019 CBA assumes that smart meters will enable suppliers to identify debt issues more quickly, and to take faster remedial action (such as by switching a smart meter into prepayment mode). This delivers a working capital saving. Since the provision of this working capital is not free (it could be utilised elsewhere and therefore carries opportunity costs), reductions in working capital requirements equate to an operational cost saving to suppliers. This is a relatively small element of the debt handling benefit. (The time saving from earlier identification is only 0.5 months, which is much less than the two month time saving the 2019 CBA assumes for more frequent billing).

4.73. Suppliers said that it would not be straightforward to switch meters to prepayment mode remotely, especially for gas customers.

4.74. We propose to maintain this benefit in general, but to consider the impact on gas meters within our review of uncertainty. We also propose to make a small change to the approach, to remove the inflationary disbenefit to consumers. All else being equal, this will reduce our assessment of the efficient net costs to suppliers.

Uncertainty over size and timing

4.75. One supplier said that being able to switch a meter into prepayment mode was a benefit. However, it said that there was uncertainty about the size and timing of these benefits. This was because there was uncertainty about any regulatory constraints, and because suppliers would trial this functionality first.

4.76. We recognise that suppliers may develop their approaches over time, so that they can get more benefits out of smart metering. We consider this point within our review of uncertainty.

Feasibility for gas meters

4.77. One supplier told us that it is not routinely possible to switch gas smart meters to prepayment mode remotely. It said that a site visit was required for safety reasons to check that there was not a secondary meter.[45] It said that this would also apply to dual fuel customers.

4.78. Suppliers should be cautious about any action which could have safety implications. We understand that suppliers may therefore have difficulty switching gas meters to prepayment mode remotely.[46] However, the earlier identification element of the debt benefit is the result of a combination of factors (eg consumers being more aware of consumption through IHDs) – not just remote switching to prepayment.[47] We therefore consider this point within our review of uncertainty, rather than by removing the benefit completely.

Inflationary disbenefit

4.79. We propose to make one change to the approach in the 2019 CBA model. This 'earlier identification' debt benefit occurs through reducing the amount of debt built up, and thereby reducing the working capital cost to suppliers. However, the calculation also nets off the disbenefit to consumers from having to pay earlier, and therefore incurring inflation-related costs.

4.80. Netting off this element is appropriate for the 2019 CBA, which looks at the costs and benefits across society. However, we are trying to calculate the impact on suppliers only. We therefore remove the consumer inflation disbenefit, so that we include the full earlier identification benefit to suppliers. This makes the debt handling calculation more appropriate for our purpose.

Considerations – reduced debt management costs

4.81. One of the benefits in the 2019 CBA is a reduction in debt management costs. Reducing the administrative burden of managing debt should decrease suppliers' operational costs. The 2019 CBA assumes the number and complexity of suppliers'

[45] We understand that this relates to sub-meters (installed for example in blocks of flats).
[46] Having engaged with the supplier who raised this point, we understand that it may be possible to trial different approaches to deal with the risks in an appropriate way, at least in certain cases.
[47] BEIS (2019), Smart meter roll-out cost-benefit analysis 2019, p42. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

debt management actions to decrease roughly in line with the total debt held (excluding overheads and fixed costs).[48]

4.82. One supplier said that the assumed benefit in this area was lower than its own experience.

4.83. We have maintained our approach in this area.

Level of benefit

4.84. One supplier said that its own data (on external debt collection costs) suggested the benefits of reduced debt administration costs were lower than assumed in the 2019 CBA.

4.85. The figures provided by this supplier may not be comparable with our estimate. First, the calculation in the debt handling model is wider. It looks at debt handling in general, not just external debt collection costs. Second, the debt management benefits are inter-related. Any difference may well be a knock-on impact of the supplier having different positions to BEIS on the other elements of the debt handling benefit. Our proposed removal of the monthly billing element of the debt has now reduced the debt management benefit as a consequence.

Customer base effects

4.86. We have considered the possibility that customers who create debt management costs are more likely to get a smart meter later, lagging these benefits. In principle, we consider this effect possible. In practice, we consider the impact highly uncertain. The analysis required to control for customer characteristics is highly complex and unlikely to produce robust definitive results. We do not consider the complexity such analysis would add is warranted, as survey data on customer characteristics does not suggest results would be conclusive.[49] We note this within our review of uncertainty.

[48] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019, pp46-47. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

[49] Ofgem (2019), Consumer Engagement Survey 2018. https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2018

Considerations - less debt

4.87. The 2019 CBA does not include all relevant benefits to suppliers. It excludes the reduction in bad debt (debt write-off) from its analysis. It does this because it is a transfer from consumers to suppliers, so it not relevant for the purpose of a CBA. (It does include a small benefit of the time value to suppliers from receiving payment, rather than recovering a tax deductible due to bad debt at a later date).

4.88. We propose to maintain the 2019 CBA assumption by not including the reduction in debt write-off.

Debt write-off

4.89. One supplier said that it expected any debt handling benefits to be more loaded towards the later cap periods. It said we were therefore incorrect to refer to our estimates as conservative in the October 2019 consultation.

4.90. In principle, reducing the amount of debt that suppliers write off is clearly a benefit to suppliers that we should recognise in our review of efficient costs.[50]

4.91. In practice, we are not satisfied that we can estimate the average write-off reduction benefit robustly and proportionately. The 2019 CBA estimates the reduction in bad debt to be worth up to £60m per year, but this is only illustrative. We collected data on debt in 2018 for the analysis of the payment method uplift allowance in the cap, but we do not have a source for the impact of smart meters on bad debt. As the rollout does not have a long track record, we do not consider that early indications would be conclusive or reliable.

4.92. On that basis we do not propose to include the benefit of reduced bad debt, but we consider this conservatism in our review of uncertainty. This is a definite source of conservatism, given that a reduction in debt write-off is a clear benefit to suppliers. We

[50] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019. Page 47. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

consider that this is a separate point from the other elements of the debt handling benefit.

Considerations – other issues

Long-run variable cost

4.93. Two supplier benefits depend on the value of energy. These are the benefits from reduced debt and reduced theft. In line with the BEIS CBA, we use a long-run variable cost (LRVC) projection to value this energy. BEIS calculates this LRVC projection. In the context of the debt benefit, one supplier noted that the LRVC was increasing over time. It told us that LRVCs were inappropriate for calculating the debt benefit, given volatility.

4.94. The LRVC trend represents BEIS's best analytical view of future prices. However, we appreciate that any forecast LRVC is inevitably subject to uncertainty, especially due to uncertainty over future wholesale prices. We have therefore considered the alternative of flatlining the latest actual LRVC values into the future. This would be on the basis that historical prices are a reasonable expectation for future prices.

4.95. The materiality of this issue is small. This is partly due to the size of the benefits in question. It is also because the changes in LRVCs are small. Relative to 2018 (i.e. relative to the values we would flatline forward under the alternative approach), the electricity LRVC in the debt model increases by at most 14% (1.2p/kWh increase in 2023), and the gas cost increases by at most 18% (0.4p/kWh increase in 2023).

4.96. We consider it reasonable to maintain using the LRVCs as calculated by BEIS, but we consider this less conservative approach within our review of uncertainty. (In particular, the current wholesale price changes associated with COVID-19 illustrate the range of uncertainty around projected wholesale prices).

Reduced theft and avoided losses

Overview of our approach

4.97. By providing suppliers with more information about consumption, smart meters can help them detect and resolve energy theft.

4.98. In line with our approach in the October 2019 consultation, we propose to maintain the 2019 CBA's benefit for the reduction in the cost to suppliers of dealing with theft. We do not propose to include the full benefit to suppliers of reduced theft overall. We propose to make a small correction to the approach to indexing these costs over time.

Overview of suppliers' responses to the October 2019 consultation

4.99. One supplier told us that there was no evidence for this benefit.

Considerations – level of benefit

4.100. One supplier said that there was no evidence of suppliers having reduced revenue protection costs due to smart metering.

4.101. We have maintained our approach in this area, for the reasons below.

4.102. The 2019 CBA excludes most of the benefit to suppliers of reduced theft. This reduction is a transfer between different groups (from those currently committing theft to suppliers), and is therefore outside the scope of the 2019 CBA. The 2019 CBA only includes a reduction in the costs to suppliers of dealing with theft. In principle, our review should include the full benefit. Excluding it overstates the efficient net cost of smart metering to suppliers (ie understates benefits).

4.103. Inherently, levels of theft are difficult to quantify. To modify the 2019 CBA assumptions for our purposes, we would need to (robustly) identify both the current value of theft, and the size of reduction we could expect as a result of smart metering. The CBA indicates that industry suggests smart meters could reduce theft by as much as 20-33%.[51] This is not a robust estimate, but may be indicative. The Allocation of Unidentified Gas Expert, the body responsible for reporting on gas losses and theft, said that it was too early to make an adjustment to unidentified gas based on the installation of a smart meter.[52]

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[51] BEIS (2019), Smart meter roll-out: cost-benefit analysis 2019, page 37. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/831716/smart-meter-roll-out-cost-benefit-analysis-2019.pdf

[52] Final Allocation of Unidentified Gas Statement for 2019/20, paragraph 7.9.5. https://gasgov-mst-

4.104. We do not propose to recognise the benefit to suppliers of reduced theft. This is due to the practical difficulties of developing a robust estimate. This is a conservative assumption, and will understate benefits. This applies regardless of any stakeholder views on the costs of managing theft – the estimate is still conservative, because it does not take into account the actual reduction in theft. We consider the impact of this in our review of uncertainty.

Considerations – indexation

4.105. The SMNCC model calculates the theft benefit in each year by multiplying a reduction in theft by the LRVC of energy supply. The LRVC values are the latest figures from the Green Book supplementary guidance, and are in real 2018 p/kWh. This is inconsistent with the rest of the SMNCC model, which is in 2011 prices. (We only convert into nominal prices at the end of the model). The current calculation will therefore slightly overstate the size of the theft benefit, by around 10%.

4.106. We therefore propose to amend this, by deflating the LRVCs from 2018 to 2011 prices.[53]

Remote Change of Tariff

Overview of our approach

4.107. For traditional meters, suppliers must visit a customer to switch them from a single rate tariff to a multiple rate tariff (eg standard to Economy 7) or vice versa. For smart meters, suppliers can do this remotely, saving them money. The 2019 CBA includes a benefit in this area.

4.108. As in the October 2019 consultation, we propose to include this benefit. However, we propose to allocate the total benefit across electricity meters only (rather than across both fuels as previously).

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files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-03/Final%20AUGS%20for%202019_20%20v1.0.pdf

[53] The debt handling model also uses the LRVC. However, the debt handling model uses the LRVC to index a bill size which is expressed in 2018 prices. There is no error with using the LRVC in real 2018 prices to do this. We therefore do not need to make a change to the debt handling model.

Overview of suppliers' responses to the October 2019 consultation

4.109. One supplier said that this benefit was too large.

Considerations – size of benefit

4.110. One supplier said that this benefit was too large. It said that, based on its own number of tariff changes and smart meters, the benefit included in the model would imply a much larger saving per visit than included in the 2019 CBA.

4.111. We have maintained our approach, for the reasons below.

4.112. In principle this is a benefit which we should include, given it represents a saving enabled by the introduction of a smart meter.

4.113. The number of tariff changes varies significantly between suppliers, especially depending on whether they were the historical electricity incumbent in regions where complex multi-register tariffs are common. Differences in a supplier's circumstances compared to the industry average are therefore not evidence of a problem.

4.114. Some suppliers have suggested that they have deprioritised the installation of smart meters for complex metering arrangements (such as this). If that applied in this case, it may delay the timing of this benefit. We do not propose to modify the 2019 CBA's assumed total benefit. Excluding the benefit is wrong in principle, and will overstate costs, particularly in later cap periods. Economy 7 is by far the most common multi-rate tariff, and some suppliers currently offer smart tariffs for Economy 7 customers (although not all suppliers currently offer smart meters with Economy 7). The materiality of this benefit is low, however we note the uncertainty in our review of uncertainty and approximation.

Considerations – allocation of benefit between fuels

4.115. The 2019 CBA allocates this benefit across all domestic meters (gas and electricity). Given that the change between a single rate and a multi-register tariff only applies to electricity, the benefit should only be allocated to electricity.[54] We therefore propose to make a change so that the remote change of tariff benefit is allocated to electricity only. This is just a change to the allocation of this benefit, rather than its total size.

[54] This would not make much difference for the purpose of the 2019 CBA, which is interested in the overall benefits of the programme (rather than calculating separate benefit figures for each fuel). However, we are setting separate caps for gas and electricity. The allocation of the benefit therefore matters for our purposes.

5. Considering uncertainty in our assessment of the net cost change

Section summary

In this chapter we consider the direction and impact of net uncertainty in our assessment of the net cost change.

Summary

5.1. Any assessment of net costs has a degree of uncertainty. As discussed in the main consultation document, an assessment of efficient smart metering costs is especially uncertain.

5.2. In our October 2019 consultation we considered the extent that our assessment was uncertain, reviewing each aspect of our assessment in turn. We set out where we thought our approach was conservative (increasing the SMNCC allowance compared to where the 'true' net cost change likely was) and where our approach may be aggressive (ie the 'true' net cost change could be higher). We considered that our estimate was conservative overall.

5.3. In this chapter, we reassess uncertainty in the light of changes we have made, after considering suppliers' views on the SMNCC model we previously disclosed.

5.4. The biggest driver of conservative uncertainty in our October 2019 consultation was the rollout profile, in particular, the extent to which suppliers would incur lower costs when they installed fewer meters than expected. Our approach in the October 2019 consultation was too conservative. In these proposals, we have adjusted our approach. This makes it less likely that we fund an supplier with an average rollout profile significantly in advance of when they install a substantial proportion of their meters.

5.5. The biggest single risk that our October 2019 proposals understated the 'true' change in efficient net costs was our assumption that the meter rental payment would reflect the underlying economic cost of installing smart meters. After reviewing additional evidence on suppliers' payments we have increased our assessment of these costs (the largest cost category for suppliers) in certain cases.

5.6. Another major source of uncertainty is the combined net impact of detailed aspects of the model. Each issue may be immaterial, but in combination they could mean that our assessment is materially different to the 'true' change in efficient net costs for a supplier with an average rollout profile. Suppliers scrutinised the model we disclosed in October 2019 and proposed extensive changes to detailed aspects of the modelling. We have reviewed these issues, and in many areas amended our proposals.

5.7. The risk here is selection bias. The changes proposed by suppliers in response to the October 2019 consultation materially increase our assessment of costs on a per meter basis. Understandably, suppliers have very little incentive to comment on inaccuracies that overstate their change in efficient net costs, only those that understate it. We have carefully scrutinised the issues raised by suppliers, giving us confidence in the changes we propose to make. In some cases we have also amended the SMNCC model after identifying points ourselves. However, asymmetric information about the detail of suppliers' operations means that there is a greater chance that we have included assumptions which are unduly conservative, compared to the chance that suppliers have failed to identify assumptions which are unduly aggressive. Relative to the situation before our October 2019 consultation, our adjustments therefore affect our review of uncertainty asymmetrically. Either, our assessment becomes exceedingly conservative, or the adjustments counteract any pre-existing optimism bias that some suppliers suspected the model may contain. Either way, we have significantly reduced the uncertain probability that 'true' change in efficient net costs of a supplier with an average rollout profile are higher than we estimate.

5.8. We consider that the net effect of our assumptions is conservative (ie the change in true efficient net costs is likely to be lower than our assessment). This suggests we should reduce the SMNCC allowance. However, considering that an assessment of uncertainty can never be precise, and that some otherwise efficient suppliers will have high costs due to their rollout profiles, we propose to not make an adjustment for uncertainty.[55]

[55] For the avoidance of doubt, this approach mitigates the issue to some extent. It does not necessarily mean that suppliers with earlier than average rollout will have their smart metering costs completely covered by the SMNCC and operating cost allowances in each cap period.

Our approach

5.9. Throughout our review of efficient smart metering costs in the preceding chapters, we have noted where our estimates are subject to uncertainty. It is important to consider these instances together, and not in isolation. It is possible that each assumption could seem reasonable on its own (for instance, including a degree of prudence), but when taken together the combined effect of that prudence in each assumption may set the allowance unrealistically high, which would not protect customers. The opposite case (where the combined judgements are unreasonably aggressive) is also a possibility.

5.10. In either case we could seek to adjust our estimates. One approach would be to revisit each or some cost assumptions to refine them. The other approach would be to adjust the SMNCC allowance itself (in either direction) to offset the combined impact. The adjustment could be different in each year, as the cost profile of assumptions and the combined impact of uncertainty differs over time.

Assessment of conservative assumptions

Methodological considerations

5.11. We consider the following aspects of our methodological approach to be conservative.

Choice of efficient benchmark

5.12. We adopt a more conservative benchmark in our review of efficient costs than would normally be the case. This has regard to suppliers that have made above-average progress with their rollout.

Rollout profile

5.13. We consider the following aspects of our approach to rollout to be conservative

Sunk costs in 2020

5.14. We have assumed that suppliers carry out fewer installations than planned in 2020 due to COVID-19, and that the vast majority of suppliers' remaining installation costs in 2020 are sunk.

5.15. The latter point is a conservative assumption. We know that several suppliers have been able to reduce their costs, either by redeploying their staff, or furloughing them. The costs they incur in 2020 may not be sunk to the extent we assume. The main consultation document illustrates how different proportions of sunk costs affect the SMNCC allowance.

5.16. We propose to assess this issue in arrears when evidence on suppliers' actual costs in 2020 is available. We propose to adjust the allowance to account for that impact if necessary.

'Business as usual' in 2021

5.17. We have assumed that suppliers' performance in 2021 will reflect their average performance between 2017 and 2019.

5.18. The rollout obligation is uncertain. As yet, no policy framework is in place for 2021 and beyond. The only current obligation that is guaranteed to continue is the New and Replacement Obligation, to take all reasonable steps to replace expired meters with a compliant smart meter. That would require a much lower level of performance than achieved historically.

5.19. The impact of social distancing (as a result of COVID-19) on performance is unclear. Suppliers are keen to restart the rollout as soon and as productively as possible. In practice, we do not know what restrictions may continue into 2021, or whether there may be impacts on customers' willingness to agree to installation visits (even if social distancing arrangements have officially ended).

Smart metering in-premises costs

5.20. We consider the following aspects of our smart metering in-premises cost assessment to be conservative.

Premature Replacement Charges

5.21. We have set PRCs based on modelled costs. The modelled costs exceed the actual charges suppliers paid in 2018 for traditional meters. (This is true before applying the meter rental uplift for electricity, and after applying the meter rental uplift for gas).

This could indicate that our approach has a degree of conservatism. However, actual payments are likely understated due to internal transfers (particularly for electricity).

Proportion of SMETS1 meters subject to PRCs

5.22. Our PRC modelling assumes that all SMETS1 meters are subject to PRCs. However, the rental uplift we apply to our bottom-up calculation is based on SMETS1 meters, including the minority that are not subject to PRCs. This will therefore slightly double count the costs of removing meters early.

868MHz asset costs:

5.23. We have included these costs. However, as they are generally based on suppliers' expectations, there is a lower degree of confidence in these costs as opposed to other areas.

Communications hub liquidated damages

5.24. We maintain the liquidated damages assumption, even though this is much higher than the cost of a communications hub. The impact of changing this would be very small.

Smart metering IT cost assessment

5.25. We consider the following aspects of our smart metering IT cost assessment to be conservative.

Isolating additional IT costs from counterfactual costs

5.26. We have taken account for the trend in reported IT costs related to smart metering, which likely overstates the trend in purely additional IT costs related to smart metering. We have also assessed the trend in total IT costs, which may better reflect the trend in truly additional IT costs (if we assume that counterfactual IT costs remain relatively constant over time). On that basis, the SMNCC may be up to £3 or £4 per dual fuel customer higher than it should be (depending on the year, see Table A4). We have not modified this assumption, but consider that is conservative, and that the true costs are likely to be between the two assessments.

IT costs amortisation period

5.27. We amortise IT assets over five years. This is slightly less than the average approach and likely less than the true economic life of the assets, which would increase the allowance disproportionately.

DCC adaptor cost

5.28. We maintain the DCC adaptor cost. This is conservative, because we already included the IT systems costs of large and mid-tier suppliers, and scaled them up to represent the full market. Adding the DCC adaptor cost as well may double count some of the IT costs for smaller suppliers. We expect this effect to be small, given the scale of these costs.

Other costs

5.29. We consider the following other aspects of our smart metering cost assessment to be conservative.

Legal and organisational costs

5.30. We have frozen legal and organisational costs at the 2017 level given suppliers' data, rather than reduce them in line with the 2019 CBA. Suppliers' RFI data suggests these costs will reduce, but the extent varies and these costs are uncertain. We take a conservative approach, keeping the costs flat. We consider it particularly conservative to assume that these costs will be flat over the full potential length of the cap (ie right through to 2023).

Tax

5.31. We apply a tax adjustment to the full cost of capital. This assumes that the average market participant is entirely equity financed.

Optimism bias

5.32. We apply optimism bias at 10% to forecast costs (using the value from the Green Book). This is conservative in our circumstances, because our input data for forecast years draw on realised costs in previous years.

Our assessment of benefits

5.33. We consider the following aspects of our benefits assessment to be conservative.

Safety visit efficiency

5.34. We propose to apply the same pavement reading inefficiency adjustment to safety visits that the 2019 CBA applies to meter readings. Although the distance between a supplier's smart meters at the end of the rollout would be the same as the distance between its traditional meters before the rollout, we consider it unlikely that during the transition period an efficient supplier would maintain the same level of efficiency that it currently has.

Less debt

5.35. We cannot robustly estimate the impact of reduced debt write off, which clearly benefits suppliers. The 2019 CBA considers this may save suppliers up to £60m a year – although this includes the consequential impact of increasing billing frequency for standard credit customers, which we now propose to remove.

Reduced theft

5.36. We cannot robustly estimate the benefit from reduced theft, which clearly benefits suppliers. In line with the 2019 CBA, we only include the social benefit from reduced theft (equivalent to a 10% reduction), rather than the full reduction in theft (which the 2019 CBA notes could be as much as 20-33%).

Electricity-only SMETS1 switches

5.37. We remove the switching benefit for all non-enrolled SMETS1 meters. This is because the benefit may not be achievable for gas meters (and therefore dual fuel customers). However, the model therefore does not include the benefit (which would be achievable) for SMETS1 electricity-only switches. We consider that the impact of this is likely to be very small, given the expected number of such switches.

Assessment of less-conservative assumptions

5.38. We consider that the areas of conservatism have a greater impact than the following assumptions, which are less conservative.

In-premises costs

SMETS2 meters on deemed contracts

5.39. The proportion of SMETS2 meters on deemed contracts (and therefore where suppliers pay higher rental charges) could rise over time as more customers switch away from the supplier who originally installed the meter.

Recycled meters

5.40. Some suppliers may face additional immediate costs when they re-install a meter that has previously been installed, if they have to pay for the entire installation cost upfront rather than amortising it over time.

Non-installed meters

5.41. Some suppliers may incur costs (rental charges) for meters and other assets that they have not yet installed. We would expect this generally to be small, as a supplier would have had a stock of smart meters in 2017 – although any impact could be larger in 2020 as a result of COVID-19.

SMETS2 PRCs

5.42. We do not include PRCs for SMETS2 meters. A small proportion of SMETS2 meters may be replaced early due to meter faults.

Smart metering IT costs

IT operating costs:

5.43. We assume future IT operating costs decrease by 25% in future years. There is a risk that they fall by a smaller percentage or flat-line for future years.

Other costs

Marketing costs

5.44. In line with representations, we have not recognised financial benefits from marketing, only the reported costs. On average, these costs peaked in 2017. By not recognising any financial benefits we reduce the SMNCC allowance in 2018 by more than if we recognised benefits. We then freeze marketing costs at 2018 levels, which should become increasingly conservative in later years, as there will be fewer customers to contact.

Restructuring costs

5.45. Efficient suppliers may incur some restructuring costs as a result of adapting their businesses to smart metering (eg to realise benefits).

Benefits

Differences in customers

5.46. It is possible that customers that disproportionately create debt management costs will be less likely to get a smart meter early in the rollout. This could delay the benefits from smart meters reducing debt management costs. Similar issues arise for inbound customer calls, and when multi-register customers adopt a smart meter.

Inbound customer calls

5.47. In line with the 2019 CBA, we assume that the cost of calls from customers with a smart meter returns to the cost level of a customer with a traditional meter (as staff become more familiar with issues, and legacy problems are resolved). It is also possible that smart customers have persistently more complicated calls as the smart meters remove the need for 'simple' calls.

Earlier identification of debt

5.48. We include the earlier identification benefit, even though part of this relates to moving customers to prepayment remotely, which may not always be possible for gas customers due to safety reasons. At most, if a large fraction of the earlier identification relied on remote switching to prepayment, this could eliminate the remaining value of the debt handling benefit.

Remote change of tariff

5.49. Some suppliers may have deprioritised the installation of smart meters for multi-register electricity meters. This could reduce the size of this benefit, at least in the early years of the rollout.

Trends in LRVC

5.50. We use a LRVC profile to project future energy costs, rather than flat-lining. Flat-lining would deliver a slightly lower LRVC, slightly reducing the debt and theft benefits.

Assessing further uncertainty

Default tariff customers

5.51. The SMNCC model looks at the costs of the rollout for the domestic supply market, rather than focussing specifically on the default tariff customers who are the subject of the cap. We have not labelled this as a conservative or less conservative assumption, as the impact is ambiguous.

5.52. Supplier suggest that default tariff customers are less likely than average to get a smart meter installed in the early years of the rollout (due to being on average less engaged). On that basis the costs and benefits in the early phase of the rollout may differ significantly from later in the rollout (as default tariff customers may require greater inducement or resources to install a smart meter, but the benefit of doing so could be higher).

Timing differences in costs

5.53. If installations for default tariff customers are cheaper than installations for customers as a whole, then later in the rollout (when the rate of installation is faster for default tariff customers than for customers as a whole) the SMNCC allowance would overstate their costs. If default tariff customers are more expensive (eg if they require more contact time per installation), then the opposite would be true.

Timing difference in benefits

5.54. However the impact on benefits may be symmetrical and offsetting to costs. Suppliers are likely to receive greater benefits from default tariff customers following the installation of a smart meter than on average from customers as a whole. For instance, they are less likely to already submit accurate meter readings online, so the impact of a smart meter is greater than it would be for an engaged online customers with a fixed tariff.

Stakeholders' views in response to the October consultation

Quantification

5.55. One supplier said that we could not present analysis as conservative without quantification to demonstrate that points in opposite directions net out.

5.56. Quantification is helpful where it is possible to illustrate the scale of issues. However, it is the nature of uncertainty that precise quantification is not possible – otherwise we would have included the estimates in the first place. In addition, we do not accept that we should only take points into account where we can quantify them (however imprecisely). We have to reach a judgement based on the issues.

IT costs

5.57. One supplier disagreed with our suggestion that IT costs were conservative. It did so on the basis that they were based on recent supplier data.

5.58. The uncertainty of IT cost information does not depend on its age. It is inherently difficult to allocate costs between those which do and do not relate to smart metering, and to consider what spend would have been required in the counterfactual. The data is therefore not conclusive, even if it has been produced to the best of suppliers' ability.

Top-down comparisons

5.59. One supplier said that there was no evidence we had assessed whether the allowance was sufficient to meet the costs of any supplier in practice.

5.60. We do not consider that it would make sense to compare the SMNCC allowance against individual suppliers' costs. The costs of smart metering are covered in two places in the cap: the operating cost allowance, and the SMNCC allowance. We therefore do not consider that a top-down comparison is relevant. Instead, stakeholders can continue to comment on the reasonableness of the assumptions feeding into our bottom-up analysis.