



# **Response to Prepayment SMNCC Allowance**

Submitted on behalf of Utilita Energy

15 June 2021

## Executive Summary

### Introduction

On 29 April 2021, Ofgem issued its Final Consultation on updating the Smart Meter Net Cost of Change (SMNCC) allowance for Prepayment Meter (PPM) customers, included in the Default Tariff Cap (DTC).<sup>1</sup> Utilita Energy (Utilita) has commissioned NERA to provide our expert economic review of the proposed methodology. The original form of this report is the confidential supplemental annex to Utilita’s response, and relies on our review of the SMNCC model (“the Disclosed Model”) and the supplier data (“the Disclosed Data”).<sup>2</sup> This version of the report has been redacted by Ofgem to remove sensitive information, and subsequently lightly edited by NERA to ensure clarity and readability.

The DTC includes allowances for wholesale costs, network costs, operating costs, a “Pass-through SMNCC” and the “Non-passthrough SMNCC”. The focus of Ofgem’s consultation is the Non-passthrough SMNCC. Unless otherwise specified, all references to “SMNCC” in this report refer to the Non-passthrough SMNCC on PPM customers. The DTC also includes a payment method uplift for PPM customers (the “PPM Uplift”).

Ofgem’s aim in setting the SMNCC allowance is to reflect changes in the operating costs of suppliers to account for the ongoing roll-out of the smart meter programme. In the Consultation, Ofgem proposes to set the non-passthrough SMNCC at zero for electricity PPM customers and reducing from *minus* £6.86 to *minus* £14.80 for gas PPM customers between October 2021 and December 2023 (see Table 1, below).

Ofgem estimates the Final SMNCC to apply in the price cap using three components:

- “Core SMNCC” - Ofgem’s modelling of the change in suppliers’ costs since 2017 as a result of the smart meter roll-out;<sup>3</sup>
- “Advanced Payments Adjustment” - allegedly over-recovered costs from previous price cap periods under the DTC when Ofgem did not award an SMNCC allowance; and
- “PPM Cost Offset” - an additional allowance to account for the acknowledged under-recovery of operating costs in the DTC for PPM suppliers through the PPM Uplift (albeit, this allowance is limited for electricity to prevent the SMNCC becoming a positive amount).

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<sup>1</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance

<sup>2</sup> We use the term “Disclosed Data” to refer to the general suite of data provided to us, and “supplier data” when referring to a specific piece of data within that suite.

<sup>3</sup> Ofgem refers to this term simply as the “SMNCC”, and refers to further adjustments to it as “Net SMNCC” and “Final SMNCC”. For avoidance of ambiguity, we refer to this first step as “Core SMNCC”.

**Table 1: Ofgem Proposed SMNCC Values (£/Customer, Nominal)**

Cap Period	7	8	9	10	11
	Oct '21 – Mar '22	Apr '22 – Sep '22	Oct '22 – Mar '23	Apr '23 – Sep '23	Oct '23 – Dec '23
<b>Electricity</b>					
Core SMNCC	-0.93	-1.36	-1.96	-2.55	-2.55
+ Advanced Payments	0	0	0	0	0
+ PPM Cost Offset	8.51	8.51	8.51	8.51	8.51
<b>= Final SMNCC</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Gas</b>					
Core SMNCC	-15.28	-17.57	-20.37	-23.18	-23.18
+ Advanced Payments	-1.18	-1.19	-1.21	-1.22	-1.22
+ PPM Cost Offset	9.60	9.60	9.60	9.60	9.60
<b>= Final SMNCC</b>	<b>-6.86</b>	<b>-9.16</b>	<b>-11.98</b>	<b>-14.80</b>	<b>-14.80</b>

Source: Ofgem Consultation, Tables 6 and 7

In other words, Ofgem estimates that the DTC is between £6.86 and £14.80 too high before the application of the SMNCC. The price cap for gas customers with PPMs will therefore fall by between £6.86 and £14.80 on average in future cap periods. With respect to electricity customers, Ofgem's analysis suggests that the DTC is between £5.96 and £7.58 too low. However, Ofgem does not intend to set an *upward* SMNCC and therefore caps the Final SMNCC at £0.

On 1 June 2021, Ofgem proposed that, due to a concurrent BEIS decision to adjust rollout targets, it would set the SMNCC based on the values determined by its existing modelling for price cap period 7. Ofgem intends to update the SMNCC again in the autumn to reflect changes in the rollout targets determined by BEIS. We understand that the autumn consultation will be limited to discussion of the rollout profile, so we respond to Ofgem's open consultation on the understanding that its proposals represent Ofgem's minded-to position for the remainder of the DTC.

## Our Review

We have reviewed Ofgem's methodology in setting the SMNCC against the following criteria, derived from Ofgem's obligations set out in the Domestic Gas and Electricity (Default Tariff) Act 2018 ("the Default Tariff Act"):

- *Cost reflectivity and recovery:* Any design of the DTC should ensure that an efficient supplier is able to recover its costs. Where the design fails to do so, either on a short-term or long-term basis, a supplier would be unable to finance its activities. This could result in a loss in competition, to the detriment of existing and future domestic customers who pay standard variable and default rates.
- *Incentives to compete:* Any design of the DTC should enable suppliers to compete effectively for customers, and to incentivise customers to actively search out more competitive suppliers. Where the design fails to do so, suppliers will be less likely to innovate to attract new customers and customers will have less choice, with rates likely to

increase, to the detriment of existing and future domestic customers who pay standard variable and default rates.

- *Incentives to improve efficiency:* Any design of the DTC should ensure that suppliers have an incentive to improve efficiency. Where the design fails to do so, either on a short-term or long-term basis, the total cost to supply will not be minimised, to the detriment of existing and future domestic customers who pay standard variable and default rates.

Broadly speaking, our review is split into two parts: First, we consider the methodology in setting the SMNCC in a given period in isolation. Second, we consider the application of the SMNCC in the wider context of the DTC and its predecessor price cap administered by the CMA.

We find that the SMNCC is materially over-stated (i.e. too negative) in every period which Ofgem proposes to apply it. Furthermore, Ofgem's application of it is selective and fails to consider the whole-life costs of the smart meter rollout.

As proposed, therefore, any negative SMNCC would fail against all three of our criteria listed above and hence would be in violation of Ofgem's obligations under the Default Tariff Act (i.e. would breach all four criteria to which Ofgem are required to have regard under that Act). We therefore conclude that a negative non-passthrough SMNCC is not justifiable for PPM suppliers, and, if any non-passthrough SMNCC is to be applied, it should be positive.

### **Methodological errors in the Core SMNCC**

We identify several errors in the "Core SMNCC" (i.e. before any inter-temporal adjustments are taken into account). As a result of these errors, Ofgem materially overstates the level of savings that PPM suppliers can expect to enjoy as a result of the smart meter rollout.

We summarise these errors in Table 2 below, all of which result in an over-estimate of the SMNCC.

**Table 2: The Core SMNCC Methodology Contains Several Material Errors**

Cost category	Sub-category	Ofgem value	Correct value	Category of error	Explanation
In-premises costs	Traditional meter asset life	14 (elec) and 12 (gas)	15 (both fuels)	Contradicted by Disclosed Data	Disclosed Data shows that traditional meters last longer than Ofgem assumes. There is no basis for Ofgem's assumption.
In-premises costs	Premature replacement charge (PRC) term	10 (both fuels)	15 (elec) and 14 (gas)	Contradicted by Disclosed Data	Disclosed Data shows that suppliers pay PRCs for considerably longer than Ofgem assumes. There is no basis for Ofgem's assumption.
In-premises costs	PRC initial value (gas only)	£236	£181	Contradicted by Disclosed Data	Ofgem inexplicably assumes that the Year 0 PRC charge is considerably higher than it actually is. Our corrected value comes directly from Disclosed Data.
In-premises costs	SM installation costs	Declining to the end of DTC	Flat at 2019 levels	Arbitrary and unreasonable assumption	SM installation costs have increased over the entire rollout period, but Ofgem assumes that trend will reverse in 2022. We see no justification for this assumption, so we assume (conservatively) that costs will return to their pre-COVID levels and stay there.
In-premises costs	In-home display (IHD) replacement rates	33%	100%	Arbitrary and unreasonable assumption	Apparently based on an outdated BEIS CBA, Ofgem assumes that only 33% of expiring IHDs will be replaced at the end of term, ostensibly being pushed out by mobile app displays. The Supplier Licence Conditions require suppliers to offer an IHD to customers, and BEIS no longer considers mobile apps to be a useful substitute for IHDs.
Operational savings	Cost-to-serve (CTS) benefit	£13.6 (elec) and £18.7 (gas)	£8.5 (elec) and £10.6 (gas)	Arithmetic error and internally inconsistent	Ofgem combines Disclosed Data in an incorrect order, and inconsistently includes data from a highly non-representative supplier. Thus, Ofgem overstates the level of CTS benefit that a supplier can actually achieve with each switched customer.
Embedded SM costs	Efficiency adjustment	-	£1.6 (elec) and £1.2 (gas)	Internally inconsistent	Ofgem has failed to consider that the Operating Cost allowance was set by a company with relatively low SM rollout in 2017. We estimate what that company's SM costs would be at its actual rollout level, and apply the difference between that and the industry rollout level in 2017.

In the table above, and set out in more detail in Chapter 3, we set out the most material errors we have identified. These errors can generally be grouped into four categories:

- **Contradictions with the Disclosed Data:** Especially with respect to assumptions on meter assets and in-premise costs, Ofgem claims to look at supplier data but then does not set an assumption that is actually supported by that data.
- **Arbitrary and unreasonable assumptions:** Some assumptions are not justified with respect to the Disclosed Data, but are instead arbitrarily set in a way that does not pass

basic sense checks. For example, despite consistently worsening smart meter installation productivity between 2017 and 2019, Ofgem assumes this underlying trend reversed from 2020, and productivity will exceed 2019 levels once the short-term effects of COVID disappear. This is unlikely to occur in practice, and Ofgem provides no justification for it.

- **Arithmetic error:** In some cases, Ofgem has combined supplier data using flawed arithmetic with unrepresentative results. For example, in the case of the CTS Benefit, Ofgem's unrepresentative order of operations suggests that suppliers could save £21.22 by switching one gas customer from a traditional to a smart meter. The same data shows that the industry only spends £16.41 more per traditional gas customer than per smart customer.
- **Internal inconsistency:** In some cases, Ofgem has applied an assumption which, on its own, may be appropriate, but cannot be consistently combined with another assumption. For instance, Ofgem calculates a *change* in smart meter costs relative to an Operating Cost benchmark level which it does not use to set the DTC.

In general, the model is convoluted and excessively complex. It has not materially been simplified since the consultation conducted in 2020 that resulted in Ofgem's decision to reconsider its model and SMNCC. The model may therefore contain many more errors than we have found. We have focussed our efforts on the most material drivers of cost and saving in the model.

In Table 3 below, we demonstrate how the SMNCC changes as we correct each of the errors above sequentially.

**Table 3: Quantified Changes to the Core SMNCC**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<b>A</b> <i>Ofgem SMNCC</i>					
Electricity	-0.93	-1.36	-1.96	-2.55	-2.55
Gas	-15.28	-17.57	-20.37	-23.18	-23.18
<b>B</b> <i>A + Corrected Traditional Asset Lives</i>					
Electricity	-0.69	-1.09	-1.65	-2.21	-2.21
Gas	-13.69	-15.72	-18.26	-20.80	-20.80
<b>C</b> <i>B + Corrected PRC Term</i>					
Electricity	0.47	0.21	-0.47	-1.15	-1.15
Gas	-8.95	-10.51	-13.60	-16.70	-16.70
<b>D</b> <i>C + Corrected PRC Start Value</i>					
Electricity	0.47	0.21	-0.47	-1.15	-1.15
Gas	-10.75	-12.59	-15.61	-18.64	-18.64
<b>E</b> <i>D + Corrected Installation Cost</i>					
Electricity	0.61	0.48	-0.03	-0.53	-0.53
Gas	-10.63	-12.34	-15.21	-18.08	-18.08
<b>F</b> <i>E + Corrected IHD Replacement</i>					
Electricity	0.69	0.65	0.26	-0.14	-0.14
Gas	-10.54	-12.17	-14.93	-17.69	-17.69
<b>G</b> <i>F + Corrected CTS Benefit</i>					
Electricity	2.54	2.91	3.01	3.11	3.11
Gas	-7.58	-8.56	-10.51	-12.47	-12.47
<b>H</b> <i>G + Efficient Supplier Adjustment</i>					
Electricity	4.50	4.87	5.00	5.13	5.13
Gas	-5.93	-6.90	-8.84	-10.77	-10.77
<i>Delta (H – A)</i>					
<b>Electricity</b>	<b>5.43</b>	<b>6.24</b>	<b>6.96</b>	<b>7.68</b>	<b>7.68</b>
<b>Gas</b>	<b>9.35</b>	<b>10.67</b>	<b>11.54</b>	<b>12.41</b>	<b>12.41</b>

As the table shows, we estimate that Ofgem’s proposed SMNCC is overstated by at least £5.43-£7.68 per customer per year for electricity and £9.35-£12.41 per customer per year for gas. We find that the electricity SMNCC is *positive* in all periods, meaning that the smart meter rollout has increased the efficient costs of a PPM supplier relative to the level embedded in the Operating Cost Allowance and the PPM Uplift.

For these reasons, we conclude that the Core SMNCC as estimated does not reflect the change in costs that an efficient supplier would incur from the smart meter rollout.

### **The selective application of the SMNCC in the wider context of price caps**

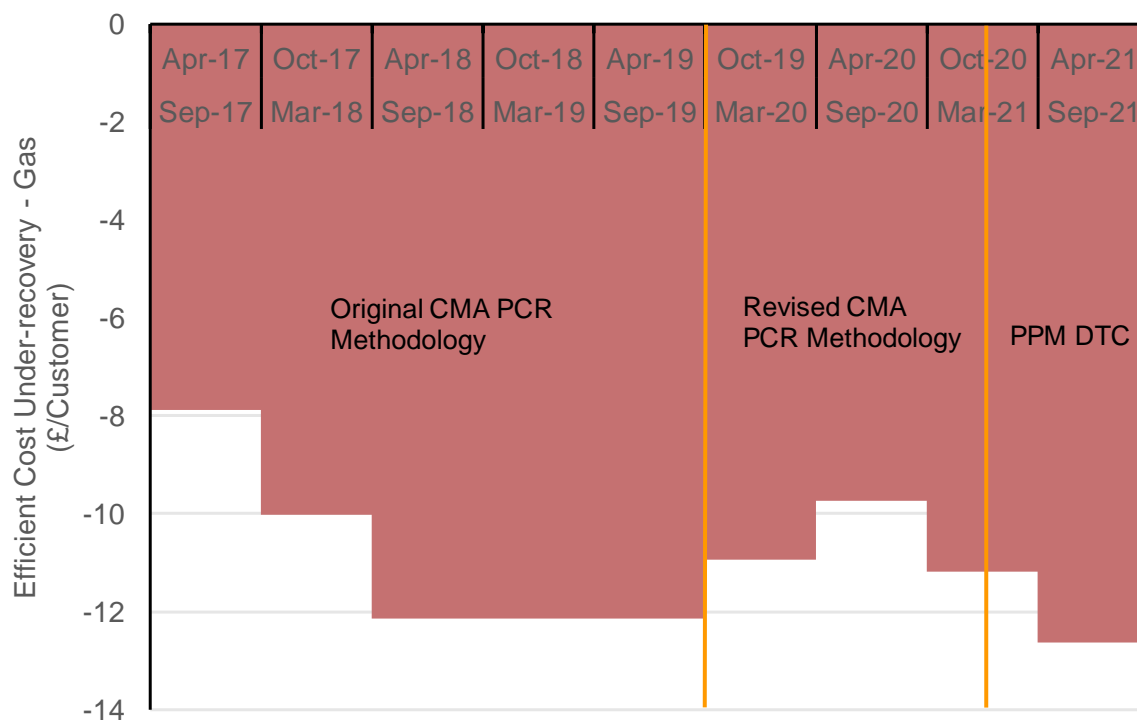
As we describe above, the Core SMNCC is materially overstated (i.e. more negative than it should be) in each of the remaining periods of the DTC. However, even if this were not the case, Ofgem has been selective and inconsistent in how it proposes to apply the SMNCC in the wider context of the price caps that have applied to PPM suppliers since 2017.

### **The Advanced Payments Adjustment is selectively applied**

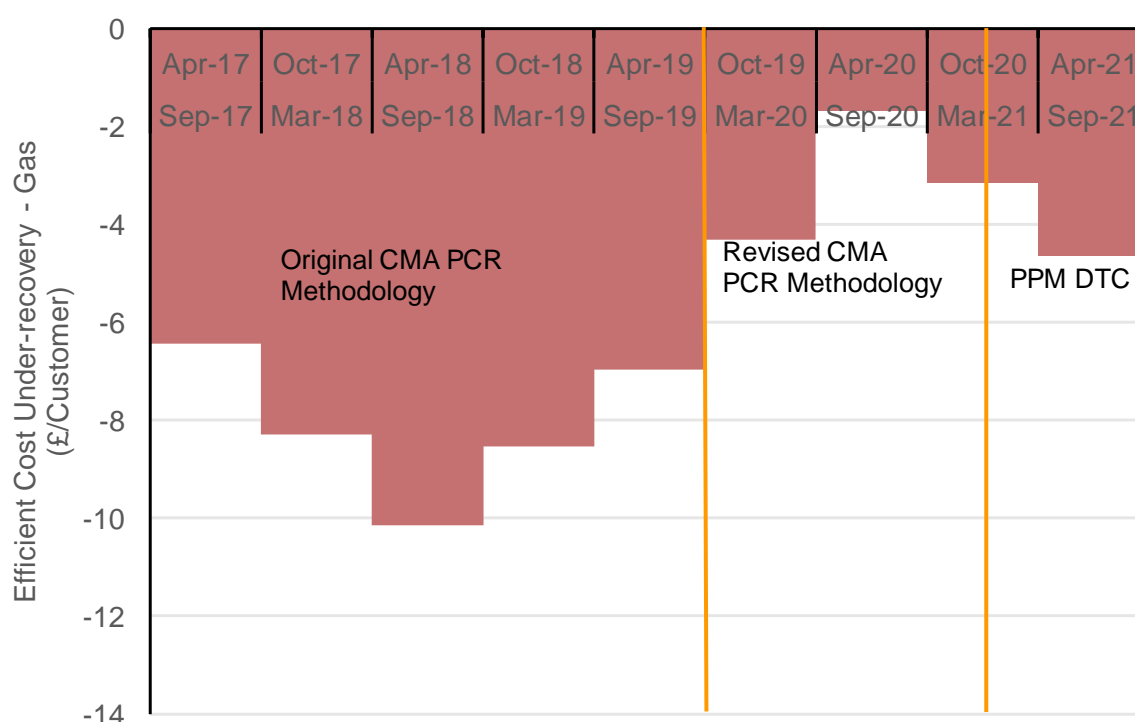
Ofgem includes an Advanced Payments Adjustment (APA) for customers which adjusts for gas suppliers’ supposed over-recovery since January 2021, when the DTC was extended to

PPM customers but without an SMNCC value applied. In actuality, the SMNCC is overstated to an extent that gas suppliers did not over-recover their efficient costs even without an SMNCC applied. Consistent with Ofgem's approach to calculating the APA from 2021, we calculate the historical over-recovery as the level of the Core SMNCC plus the PPM Cost Offset, but using the corrected Core SMNCC as in Table 3. We present this in Figure 1 and Figure 2 below.

**Figure 1: Rollout Under-recovery, Corrected SMNCC - Electricity**





**Figure 2: Rollout Under-recovery, Corrected SMNCC - Gas**

Source: NERA analysis of Disclosed Model

We find that suppliers have under-recovered their efficient costs on both fuels in every period, by £49.40 (electricity) and £27.07 (gas) per customer in aggregate from April 2017, in 2021 GBP. From January to September 2021 only, suppliers under-recovered by £9.11 (electricity) and £3.11 (gas) in aggregate.

If Ofgem were to apply an internally consistent APA that covers the whole period from April 2017, it would need to apply an *upward* adjustment of £21.96 (electricity) and £12.03 (gas) per customer per year, for each of the remaining price cap periods, in 2021 GBP.

If Ofgem applied its selective APA that only applies from January 2021 (for which there is no logical justification if the purpose is to achieve cost reflectivity), it would still need to apply an *upward* adjustment of £4.05 (electricity) and £1.38 (gas) per customer per year, for each of the remaining price cap periods, in 2021 GBP.

Ofgem takes the view that historical under-recovery under the CMA price cap is not its concern. This ignores the need to ensure supplier financeability set out in the Default Tariff Act. Suppliers' financeability today is a function of its cashflows over a long period of time, including during the period of the CMA price cap.

When the CMA reviewed its price cap methodology in 2019, it decided not to include an adjustment for either the costs or the benefits of the smart meter rollout, in part because both exist and are partially offsetting.<sup>4</sup> Ofgem's proposal only to apply an SMNCC when it is (according to its inaccurate calculations) negative takes away these benefits, and is thus

<sup>4</sup> CMA (31 July 2019), Review of the Energy Market Investigation (Prepayment Charge Restriction) Order 2016, para. 2.81.

inconsistent with the CMA's approach and justification for not revisiting the historical under-recoveries. As such, if Ofgem intends now to remove the benefits, consistency and cost-reflectivity would require it also to take account of those historical under-recoveries and correct for them. In order to allow for whole-life cost recovery of the smart meter rollout (which would be consistent with the CMA's reasoning), Ofgem should consider the entire period since 2017 in setting the APA, and must base it on the corrected version of the Core SMNCC.

In essence, Ofgem seeks to claw back only the over-recovery for the small portion of the historical period where Ofgem believes that it exists, for gas customers only, based on an incorrect estimate of the Core SMNCC. In so doing, it ignores the wider context of historical under-recovery for gas customers as well as the fact that suppliers *continue* to under-recover on electricity customers even under Ofgem's own incorrect estimate of the Core SMNCC.

Ofgem is correct to apply the PPM Cost Offset, but has no basis to apply it only on a per cap basis

Ofgem acknowledges that the PPM Uplift may have been understated by up to £17 across both fuels in the CMA's original calculation of it, based on how the CMA compared the tariff and cost data that was provided by suppliers.<sup>5</sup> To correct for this underestimate, Ofgem proposes to include a PPM Cost Offset, such that no SMNCC will apply until the full value of the understatement is recovered.

Ofgem proposes to apply the PPM Cost Offset on a per period basis rather than a cumulative basis, reasoning that its estimate of the understatement is an upper bound and hence "there is a risk that any offset could be too generous to suppliers".<sup>6</sup> Ofgem chooses "to err on the side of a slightly greater risk of under-compensating suppliers because of the overriding need to protect consumers".<sup>7</sup>

Ofgem's reasoning is incorrect.

Ofgem's estimate is not an upper bound but instead represents a reasonable central estimate, for reasons we set out in Section 4.2.1. Therefore, while there may be risk that the offset is too generous to suppliers (if fully applied), this is no larger than the risk that it is too low and does not allow suppliers to recover their efficient costs.

Ofgem claims to consider the balance "between protecting consumers and having regard to suppliers' efficient costs", choosing to err on the side of the former, but this is a false dichotomy.<sup>8</sup> Consumers, particularly future consumers, are not protected when a price cap is set beneath suppliers' efficient costs, as this tends to reduce competition. Ofgem will better protect consumers by ensuring the PPM DTC is set at a level consistent with suppliers' efficient costs.

Moreover, the balance of this risk must be considered in the wider context of the price cap regimes. Ofgem knows that suppliers were unable to recover their efficient costs under the

<sup>5</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.70.

<sup>6</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.79

<sup>7</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.80.

<sup>8</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.80.

original CMA PCR methodology, though it has decided not to correct for it. Even if one accepts that such a correction is beyond its remit, Ofgem still should take into account the substantial historical under-recovery when considering the supposed risk of over-remunerating suppliers (particularly where such over-remuneration will still not compensate for those historical under-recoveries).

Ofgem states that this methodological decision makes little difference in practice based on values of the Core SMNCC that Ofgem proposes. However, this ceases to be the case when we correct the primary errors in the Core SMNCC, as set out in Table 3. In Cap Periods 7, 8 and 9, the full value of the PPM Cost Offset for gas would not be applied, because the Core SMNCC is smaller than the PPM Cost Offset.

Even if one were to accept that the Final SMNCC can never be positive (which we do not), at a minimum the PPM Cost Offset should be applied cumulatively such that suppliers are closer to whole-life cost recovery. However, this would still be an unjustified limitation on cost recovery that Ofgem has power to allow for and control.

### Ofgem has no reason to cap the SMNCC at £0 per fuel

Ofgem imposes a cap of £0 on the SMNCC in each fuel, in order to “maintain the cost differential between cap levels for PPM and DD customers”.<sup>9</sup> This is an arbitrary objective that does not relate to any of Ofgem’s obligations set out in the Default Tariff Act, nor does it override any of those obligations.

Ofgem’s overriding obligation is to protect existing and future default customers. This is best achieved by ensuring that efficient suppliers can recover their costs, rather than imposing an additional and arbitrary constraint on tariffs.

Ofgem allows for final tariffs to change (and increase) as a result of other components of the DTC – if network costs or wholesale energy costs rise, suppliers are able to pass these through to consumers. The cost of smart meter rollout is no different. If the result of these mandatory activities is an increase in suppliers’ costs, then this should equally be passed through to customers.

In fact, this is how Ofgem sets the non-passthrough SMNCC for credit and debit customers, shown in Table 4 below. Because the net costs of the rollout are positive, Ofgem rightly allows suppliers to recover those costs. By failing to apply the same principle to PPM suppliers, Ofgem unduly discriminates against PPM suppliers.

**Table 4: The Credit SMNCC is Positive in All Periods**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
Electricity	10.26	9.78	9.89	10.00	10.00
Gas	3.33	1.99	1.65	1.32	1.32

*Source: Ofgem Credit SMNCC Consultation, Table A1.1*

Although the principle is arbitrary and unfounded in Ofgem’s statutory obligations, Ofgem has also incorrectly implemented its desire to ensure that the price differential between debit

<sup>9</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 7.21

and PPM customers does not increase. To actually apply that principle correctly, Ofgem would need to cap the PPM SMNCC not at £0 but at the differentiated level of the *credit* SMNCC (as shown above). Otherwise, because the credit SMNCC is positive, Ofgem unduly forces the gap to widen.

## Conclusions and recommendations

We conclude that the methodology underpinning the Core SMNCC contains material errors and logical inconsistencies. We demonstrate that, through implementing corrections to several of these errors, the electricity Core SMNCC should actually be *positive*, between *plus* £4.50 and £5.13 per customer per year, while the gas SMNCC should be substantially less negative, between *minus* £5.93 and £10.77 per customer per year. These figures are *before* the application of the PPM Offset.

Ofgem has been selective and arbitrary in its proposals to (a) apply an APA only since January 2021 while ignoring large smart metering cost under-recoveries under the CMA PCR (which is itself inconsistent with the CMA's own rationale for not correcting for those under-recoveries at the time); (b) apply the PPM Cost Offset on a per period rather than cumulative basis; and (c) cap the PPM SMNCC (but not the credit SMNCC) at £0. These proposals ensure that PPM suppliers will be unable to recover their whole-life costs of the smart meter rollout (or even their contemporaneous costs), making it more challenging to finance their businesses and effectively compete.

In light of these findings, we consider the overall proposed methodology against our assessment criteria:

- *Cost reflectivity and recovery:* The SMNCC is materially overstated, meaning that the DTC that applies to PPM suppliers is beneath the efficient costs of supply. This could force efficient suppliers to become unfinanceable, resulting in a reduction in competition and an increase in tariffs.
- *Incentives to compete:* Because the DTC would be set beneath the efficient costs of supplying a PPM customer, suppliers would not have an incentive (and would not be enabled) to grow their PPM customer bases. This will tend to ensure that tariff offerings are very near the level of the cap (rather than beneath it, which would be loss-making), and could result in higher tariffs upon expiry of the DTC.
- *Incentives to improve efficiency:* The SMNCC sends perverse signals on a whole-life basis, where PPM suppliers are asked to forgo efficiency benefits achieved through costs incurred before the SMNCC was introduced. Any benefits or efficiencies achieved today are the direct result of the investments made historically. By expropriating these benefits, Ofgem dampens incentives for further investments.

Accordingly, if Ofgem implements the SMNCC as proposed, it will fail to protect existing and future domestic customers who pay standard variable and default rates. Thus, the existing methodology is in breach of Ofgem's statutory obligations set out in the Default Tariff Act.

In order to implement an SMNCC which is consistent with its statutory obligations, Ofgem must implement the following changes, at a minimum:

1. Correct for the errors we have identified in the Core SMNCC, so that it is at least cost reflective on a contemporaneous basis.
2. Apply the PPM Cost Offset fully in all periods.
3. Remove the £0 cap on the SMNCC.

Additionally, to ensure long-term financeability of PPM suppliers and whole-life cost recovery, Ofgem should apply an APA which accounts for the under-recovery from April 2017. As an alternative, we also present an APA which accounts only for under-recovery from January 2021. These values include (i) our corrections to the Core SMNCC; and (ii) the full PPM Cost Offset.

We set out these options in Table 5 below.

**Table 5: Recommended SMNCC Levels**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<b>Electricity</b>					
Core SMNCC	4.50	4.87	5.00	5.13	5.13
PPM Cost Offset	8.51	8.51	8.51	8.51	8.51
Apr 2017 APA	22.16	22.36	22.61	22.87	22.87
Jan 2021 APA	4.09	4.12	4.17	4.22	4.22
<b>Final SMNCC - No APA</b>	<b>13.01</b>	<b>13.38</b>	<b>13.51</b>	<b>13.64</b>	<b>13.64</b>
<b>Final SMNCC - Apr 2017 APA</b>	<b>35.16</b>	<b>35.74</b>	<b>36.12</b>	<b>36.51</b>	<b>36.51</b>
<b>Final SMNCC - Jan 2021 APA</b>	<b>17.09</b>	<b>17.51</b>	<b>17.68</b>	<b>17.85</b>	<b>17.85</b>
<b>Gas</b>					
Core SMNCC	-5.93	-6.90	-8.84	-10.77	-10.77
PPM Cost Offset	9.60	9.60	9.60	9.60	9.60
Apr 2017 APA	12.14	12.25	12.39	12.53	12.53
Jan 2021 APA	1.39	1.41	1.42	1.44	1.44
<b>Final SMNCC - No APA</b>	<b>3.67</b>	<b>2.70</b>	<b>0.76</b>	<b>-1.17</b>	<b>-1.17</b>
<b>Final SMNCC - Apr 2017 APA</b>	<b>15.81</b>	<b>14.95</b>	<b>13.15</b>	<b>11.36</b>	<b>11.36</b>
<b>Final SMNCC - Jan 2021 APA</b>	<b>5.06</b>	<b>4.10</b>	<b>2.19</b>	<b>0.27</b>	<b>0.27</b>

Source: NERA analysis

As the table shows, even if Ofgem does not take into account historical under-recovery *whatsoever*, a cost reflective SMNCC would be positive in every period for electricity, and positive in aggregate for gas. If any consideration of historical under-recovery is included (even just since January 2021), the SMNCC would be positive in every period for gas as well as electricity.

Therefore, we conclude that a *negative* SMNCC cannot be consistent with Ofgem's statutory obligations (or our assessment criteria that derive from them) when the evidence clearly and objectively points to a *positive* SMNCC.

## 1. Introduction

On 29 April 2021, Ofgem issued its final consultation on updating the Smart Meter Net Cost of Change (SMNCC) allowance for Prepayment Meter (PPM) customers, included in the Default Tariff Cap.<sup>10</sup>

As of 1 January 2021, upon the expiry of the existing PPM price cap administered by the Competition and Markets Authority since April 2017, the DTC has applied to PPM customers who are subject to default or standard variable tariffs (default customers).

The DTC has been in place since 1 January 2019 and initially applied only to default customers (default customers) who pay through the two other available means: Direct Debit (DD) and Standard Credit (SC). In extending the DTC to PPM customers, Ofgem introduced two PPM-specific adjustments, such that the final level of the cap could be different for PPM customers than for DD or SC customers:

- The PPM Uplift captures the incremental cost per customer associated with owning and operating a traditional PPM relative to a traditional credit meter; and
- The Non-passthrough SMNCC accounts for the change in costs due to the smart meter roll-out relative to the combination of the Operating Cost Allowance in the DTC and PPM Uplift that together form the Operating Cost Allowance for PPM customers. Unless otherwise specified, “SMNCC” refers to the Non-passthrough SMNCC for PPM customers.

When it extended the DTC to PPM customers, Ofgem initially implemented a contingency plan in which it set the SMNCC to zero.<sup>11</sup>

In its latest consultation, Ofgem now proposes to introduce a negative value for the SMNCC to take effect from Cap Period 7 (October 2021-March 2022). In particular, Ofgem proposes that the SMNCC for customers should take a value of -£6.86 per gas customer per year, increasing in magnitude to -£14.80 by Cap Periods 10 and 11 (March-September and October-December 2023). In other words, the DTC on PPM gas customers would be reduced by that amount relative to the allowance that derives from the non-payment-type specific parameters and the PPM Uplift.

Ofgem acknowledges that, due to how the CMA calculated the PPM Uplift originally, it may have under-estimated the additional cost to serve PPM customers by up to £17 (dual fuel).<sup>12</sup> Thus, Ofgem now proposes to include this possible cross-subsidy as an offset to the SMNCC. Because the electricity value of the cost offset required is larger in all periods than the base level of the electricity SMNCC, Ofgem does not propose to apply a negative SMNCC for electricity consumers.

Ofgem has requested opinions from industry stakeholders in response to its consultation document. Utilita Energy (Utilita) has commissioned NERA to provide our expert economic

<sup>10</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance

<sup>11</sup> Ofgem (5 August 2020), Reviewing smart metering costs in the default tariff cap: August 2020 decision, para. 4.80.

<sup>12</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.70.

review of the proposed methodology. This report is the confidential supplemental annex to Utilita's response.

Additionally, subject to agreeing to confidentiality terms, Ofgem has made available the underlying data ("the Disclosed Data") to suppliers' advisers, but not to suppliers themselves.<sup>13</sup> On behalf of Utilita, we have agreed to these terms and therefore have viewed the Disclosed Data on behalf of Utilita.

This report proceeds as follows:

- In Chapter 2, we set out the factual background to the current consultation, describing the history and derivation of key terms in previous decisions by the CMA and Ofgem;
- In Chapter 3, we appraise the methodology underpinning the SMNCC. We find that Ofgem's methodology and data analysis contains material errors and logical flaws. Therefore, the resulting SMNCC numbers are not an accurate reflection of the efficient costs that a supplier would incur to serve PPM customers;
- In Chapter 4, we consider the consistency of the SMNCC within the wider context of the DTC and the smart meter roll-out. We find that several elements of the proposed methodology are inconsistent with (a) other components of the overall DTC; and/or (b) the full life costs of the smart meter rollout.
- In Chapter 5, we present our conclusions. Overall, we find that the proposed SMNCC methodology does not reflect the costs and savings of the smart meter rollout, is inconsistent with other components of the PPM DTC methodology, and fails to allow PPM suppliers to recover the full-life costs of smart meter roll-out. Implementing the SMNCC as proposed would be inconsistent with Ofgem's statutory duties. Instead, we propose an alternative SMNCC which corrects many of the errors we identify throughout the report, is consistent with Ofgem's statutory obligations, and ensures that costs do not increase for any class of customers.

The original version of this report relied on analysis of the Disclosed Model and Disclosed Data. This version of the report has been redacted by Ofgem to remove sensitive information, and subsequently lightly edited by NERA to ensure clarity and readability.

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<sup>13</sup> We use the term "Disclosed Data" to refer to the general suite of data provided to us, and "supplier data" when referring to a specific piece of data within that suite.

## 2. Background to PPM Price Control and the SMNCC

Broadly speaking, the SMNCC is intended to capture the changes in efficient operating costs relative to allowances already given to suppliers through the Operating Cost Allowance and the PPM Uplift, due to the rollout of the smart meter programme. The DTC also includes a separate SMNCC for credit customers which captures the changes in efficient costs that credit suppliers face relative to the allowances already given through the Operating Cost Allowance.

In this chapter, we set out the factual background underpinning:

- The CMA Prepayment Charge Restriction (PCR), introduced in April 2017 and subsequently amended in 2019. The CMA price cap introduced the PPM Uplift.
- The DTC, originally applicable only to default customers paying through Direct Debit (DD) or Standard Credit (SC) as of 2019 but extended to PPM customers in 2021. The Operating Cost Allowance has not changed since it was originally introduced, except due to inflation; and
- Ofgem's current proposal to introduce a negative SMNCC for PPM customers.

### 2.1. CMA Prepayment Charge Restriction

In June 2014, following a consultation with participants in the energy market in the UK, Ofgem referred the matter to the CMA, to investigate whether there were features in the energy market that prevented, restricted or distorted competition. The ensuing Energy Market Investigation concluded with a final report published 24 June 2016.

Amongst a range of findings regarding the wholesale and retail markets, the CMA concluded that “a combination of features concerning energy supply specifically to the prepayment segments gives rise to an [adverse effect on competition] through reducing suppliers' ability and/or incentives to compete to acquire prepayment meter customers and to innovate by offering tariff structures that meet customers' demand”.<sup>14</sup>

Out of this finding, the CMA introduced a price cap for the supply of retail electricity and gas to all PPM customers, to last from 1 April 2017 to 31 December 2020. The PCR was determined for (a) a customer with nil consumption, and (b) a customer with typical consumption (of 3,200 kWh and 13,500 kWh per year). The actual PCR applicable to a customer with a specific consumption level was interpolated (or extrapolated) on a straight-line basis from these two points.

One of the five CMA panel members, Professor Martin Cave, dissented from the majority opinion, supporting the PPM price cap but arguing that a price cap should be applied to all default customers. Under this approach, he argued, all default customers would receive immediate relief from high charges, while also being set at a level “to provide appropriate incentives to switch to a cheaper tariff” and hence allow competition to develop.<sup>15</sup>

<sup>14</sup> CMA (24 June 2016), Energy Market Investigation – Final Report, para. 167.

<sup>15</sup> CMA (24 June 2016), Energy Market Investigation – Final Report, Statement of dissent of Professor Martin Cave, para. 8.



Although the PCR was calculated in terms of GBP per customer per year, the level of the cap was set for six-month cap periods, from April to September, and October to March.

### 2.1.1. Original PCR methodology

The original methodology, in effect from 1 April 2017 to 30 September 2019, was set out in the CMA's Final Report of the Energy Market Investigation and implemented as Licence Conditions for electricity and gas retail suppliers. The total PCR was built up from several cost components. In Table 2.1, we summarise how each component was derived.

**Table 2.1: Original PCR Methodology**

	<b>Electricity</b>		<b>Gas</b>
<i>Cost Component</i>	<i>2015 Baseline Value</i>	<i>Indexation Approach</i>	<i>Differences from Electricity Approach (if any)</i>
Wholesale Costs	Wholesale costs per customer in benchmarking exercise	Change in wholesale price index	Indexed to CPI
Network Costs	N/A	Passthrough from network charging statements	
Policy Costs	Policy costs per customer in benchmarking exercise	Change in total costs of social and environmental programmes	
Indirect Costs	Indirect costs per customer in benchmarking exercise	Indexed to CPI	
PPM Uplift	Top-down comparison of cheapest cost per PPM customer to cheapest cost per DD customer	Indexed to CPI	Bottom-up build-up of differential, indexed to CPI
Headroom	£15 (or 4.23% of costs excl. Networks)	4.23% of costs excl. Networks	3.48% of costs excl. Networks (based on £15 starting point)

Source: CMA (24 June 2016), *Energy Market Investigation – Final Report, Section 14*

### 2.1.2. Updated PCR Methodology

In 2019, the CMA launched a mid-period review of the PCR, to assess whether any changes in circumstances necessitated a change or removal of the PCR. It found that:<sup>16</sup>

- Conditions for competition had not improved materially since the introduction of the PCR.

<sup>16</sup> CMA (31 July 2019), Review of the Energy Market Investigation (Prepayment Charge Restriction) Order 2016 – Final Decision, para. 4.

- The roll-out of smart meters had not progressed in line with projections at the time of the introduction of the PCR, meaning “that there will be a significant proportion of prepayment customers without a smart meter at the time the PCR expires on 31 December 2020, when the roll-out was expected to be substantially complete”.
- The DTC was introduced in January 2019, but the CMA did not see any evidence that the co-existence of the PCR and the DTC had significantly affected incentives of suppliers or customers.
- However, the existence of the DTC was relevant for assessing whether there were material changes to costs since the PCR was introduced.
- The original PCR was “materially underestimating costs” relating to policy costs and passthrough smart metering costs.

On account of the final item above, the CMA concluded that because the PCR was set too low, there was a risk that “suppliers reduce service levels to prepayment customers, competition is materially reduced, and suppliers may be forced to exit the market. [...] We consider that this means that the [PCR] is no longer appropriate and needs to be varied”.<sup>17</sup>

As a result, the CMA varied the PCR “to adopt Ofgem’s DTC methodology, adjusted to reflect the specific costs in supplying prepayment customers”. In particular, the updated methodology directly adopted Ofgem’s DTC values for wholesale costs, network costs, policy costs and operating costs (i.e. indirect costs), but excluding non-passthrough smart meter costs.

However, the CMA retained its same approach for the PPM Uplift, described further below.

### **2.1.3. Derivation of the PPM Uplift**

As part of its original price cap methodology, the CMA analysed a range of evidence submitted by suppliers to determine the scale of the efficient incremental PPM costs.

Across the two fuels, it considered both top-down and bottom-up evidence.

For its top-down analysis, the CMA asked large and mid-tier suppliers to submit their costs per customer, separately by fuel and payment type. The CMA defined two samples from the data provided: the six largest suppliers, including and excluding Utility Warehouse (included because the CMA found that its PPM customer base could be reasonably compared to those of the six largest suppliers). For each of these samples and fuels, the CMA took the difference between the lowest unit cost per PPM customer and the lowest unit cost per DD customer. The CMA calculated a difference for electricity of £22 (excluding Utility Warehouse) and £26 (including Utility Warehouse). For gas, the differentials were £34 (including Utility Warehouse) and £54 (excluding Utility Warehouse).

Observing that “the cost differential estimates for electricity were relatively consistent at around £22 to £26”, the CMA set the PPM Uplift for electricity at the mid-point of these estimates (£24 per customer).

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<sup>17</sup> CMA (31 July 2019), Review of the Energy Market Investigation (Prepayment Charge Restriction) Order 2016 – Final Decision, para. 5.

For gas customers, the CMA concluded that “there was a greater range of estimates (from £34 to £54) and consequently greater uncertainty over the cost differential for an efficient supplier”.<sup>18</sup> Because its top-down assessment was not reliable enough to set the gas PPM Uplift, the CMA instead relied on a bottom-up assessment of incremental PPM costs.

We present the bottom-up analysis carried out by the CMA for the gas PPM Uplift, based on supplier-submitted data up to 2014. The CMA set the PPM Uplift based on the mid-point of its low- and high-case findings. We list each item and its derivation in Table 2.2 below. The CMA presented data for each of the same line items for electricity, giving low- and high-case estimates of £19.29 and £32.97 in total.

**Table 2.2: Bottom-up Gas PPM Uplift**

		Low		High	
<b>Metering</b>					
	Rentals	21.1	Supplier-reported difference in capital costs, annuitised over 5 years at 10% WACC	22.63	Difference between the lowest reported rental and the average for the Six Large Energy Firms
	Maintenance	1.94	Considered the lower end of the range in maintenance costs to reflect an efficient level	3.87	Average of meter maintenance costs incurred by the Six Large Energy Firms
	Installation	1		1.36	
	Removal	0	Removal costs are assumed to be similar between meter types	1	Increased upper bound by £1 per year in response to party submissions
	Reading	-1.58	Based on the data and beliefs reflected in majority of submissions	0	
<b>Cost to pay</b>					
	Paypoint/Pay zone charges	5.99	Estimated as the average of what National Service Infrastructure Providers (NSPs) charge	7.38	Estimated as the average of what the Six Large Energy Firms charge
	Itron & Siemens charges	6.11	Used company data to consider cost ranges. Employed an average calculated from using the total annual charge spread over the average number of annual PPM customers	6.79	Same
<b>Other servicing costs</b>					
	Bad debt	-2.56	Since PPM clients pay in advance for energy use, consider that PPM customers would have a lower cost of bad debt collection than DD customers, implying a negative differential	-1.3	Based on a submission by Economy Energy and E.ON
	Call centre	-0.1	Assumption that a 10 pence differential on each fuel might be sufficient to fund 20 additional call centre agents	6.1	Based on a submission by SP
	Other costs	-0.7		-0.2	
<b>Grand total</b>		31.2		47.63	
<b>Mid-point</b>				39.42	

Source: CMA (24 June 2016), *Energy Market Investigation – Final Report*, Appendix 9.8.

<sup>18</sup> CMA (24 June 2016), *Energy Market Investigation – Final Report*, Appendix 9.8, para. 164.

## 2.2. Default Tariff Cap

In February 2018, the Government released its response to the CMA’s Energy Market Investigation. Among other findings, the Government agreed with Professor Martin Cave’s dissenting opinion “that a temporary cap on energy prices would provide protection to consumers while the remedies are implemented, smart meters are rolled out and the conditions for effective competition are established”.<sup>19</sup>

Following on its response, the Government passed the Domestic Gas and Electricity (Tariff Cap) Act 2018 (the “Default Tariff Act”), which required Ofgem to implement a DTC which protected customers on default and standard variable tariffs. The Default Tariff Act allowed Ofgem to exempt customers who were already protected through existing price caps, namely the PCR.

The cap was required to be in place at least until the end of 2020, at which point it could be extended by annual decisions from the Government to the end of 2023, at which point it will expire.<sup>20</sup>

On 6 November 2018, Ofgem released its methodology for the DTC, with the first cap period taking effect on 1 January 2019 until 31 March 2019.<sup>21</sup> Subsequent cap periods are six months each, aligning with the PCR.

We set out Ofgem’s methodology in setting each component of the DTC in Table 2.3 below.

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<sup>19</sup> Department for Business, Energy and Industrial Strategy, (February 2018), Government Response to the Competition & Markets Authority Energy Market Investigation, p.2.

<sup>20</sup> Domestic Gas and Electricity (Tariff Cap) Act 2018, Provision 8.

<sup>21</sup> Ofgem (6 November 2018), Decision – Default tariff cap – Overview Document.

**Table 2.3: Default Tariff Cap Methodology**

Cost Component	Baseline Value	Updating Approach
Wholesale Costs	Forward contract cost (6 months of trade data, ending 2 months before cap period, for delivery over 12 months starting on the first day of the price cap period).  Additional allowances for: shaping, forecast error, imbalance and transaction costs; gas losses; and additional uncertainty. Each of these is set as a percentage of the forward contract cost.  Additional allowance for the Capacity Market scheme, based on incurred costs and forecasts.	Allowance re-calculated for each period.
Network Costs	Network charging statements, adjusted for assumptions about demand and losses.	Allowance re-calculated for each period.
Policy Costs	Total cost of various schemes set on a per MWh basis.	Allowance re-calculated for each period.
Operating Costs	Benchmark of dual fuel costs per customer	CPIH
Pass-through SMNCC	Charging statements from “smart industry bodies” (Data Communications Company, Smart Energy GB and Smart Meter Installation Code of Practice).	Allowance re-calculated for each period.
Non-pass-through SMNCC	Modified BEIS CBA model.	Allowance re-calculated for each period.
Credit Payment Method Uplift	Benchmarking exercise of additional costs to serve credit customers.	CPIH
EBIT	1.9%, based on CMA analysis in the Energy Market Investigation	N/A
Headroom	£10 (dual fuel) = 1.46% of direct debit costs excl. network costs.	1.46% of direct debit costs excl. network costs.

Source: Ofgem (6 November 2018), *Default Tariff Cap: Decision*.

Three components of the DTC methodology are directly relevant to the response to this consultation, which we expand upon below:

- **Operating Cost Allowance.** We discuss Ofgem’s methodology in greater detail in Section 2.2.1.
- **Non-passthrough SMNCC.** However, this term is payment-method-specific, so we describe Ofgem’s SMNCC methodology in Section 2.3, where we describe the methodological basis of Ofgem’s current proposal to introduce a negative SMNCC to PPM customers.
- **Headroom allowance.** We discuss Ofgem’s approach to determining the headroom allowance in Section 2.2.2.

### 2.2.1. Derivation of DTC Operating Cost Allowance

The Operating Cost Allowance applied to both payment types originally within the DTC (i.e. DD and SC), and then extended to PPM customers within the PCR and then the DTC. The Operating Cost Allowance is Ofgem's estimate of the efficient costs of serving DD customers, while suppliers receive an uplift for the additional operating costs associated with serving credit customers (the payment method uplift).

Ofgem set the Operating Cost Allowance based on a benchmarking exercise of retail suppliers' operating costs per customer, as reported in each supplier's 2017 CSS, as follows:<sup>22</sup>

- Ofgem collected operating costs for 2017 from the CSS of 15 medium and large suppliers;
- In order to ensure that its benchmark accurately reflected the scope of costs covered by the Operating Cost Allowance, it made some positive and negative line-item adjustments:
  - For example, depreciation and amortisation is covered by the Operating Cost Allowance but not reported within operating costs in the CSS, while the cost of the feed-in tariff scheme is covered by the policy cost allowance but reported within operating costs in the CSS.
- The objective of the benchmarking exercise was to identify the efficient costs of serving a direct debit customer. Therefore, Ofgem subtracted costs in line with each company's reported operating costs based on its population of credit and PPM customers.
  - For each company's population of credit customers, Ofgem subtracted bad debt and call centre costs specific to credit customers, as reported by suppliers;
  - For each company's population of PPM customers, Ofgem subtracted the value of the CMA's estimated PPM Uplift (i.e. as originally implemented in the PPM price cap, but indexed for inflation) for 2017. This was equal to £24.41 for electricity and £39.66 for gas (£64.07 for dual fuel).
- Ofgem then divided the normalised total operating costs by each company's *total* number of customer accounts (i.e. including credit and PPM customers, and counting dual fuel customers twice), effectively providing a cost per customer if all customers were direct debit customers (and Ofgem's assumptions about the costs of credit and PPM customers were correct).
- Of these 15 companies, Ofgem discarded data from one on account of its customer numbers falling below 250,000 by the end of 2017, and four on account of having atypical customer bases (due to their business strategy).<sup>23</sup>
- Of the remaining 10 companies, Ofgem identified the "lower quartile" operating costs per customer account. Ofgem deducted £5 from this level. In its judgement, "setting a benchmark £5 beneath the lower quartile for a dual fuel customer – amounting to around a fifth of the difference between the costs of the lower quartile and the frontier supplier –

<sup>22</sup> See Ofgem (6 November 2018), Default Tariff Cap: Decision, Appendix 6 – Operating Costs, for more details.

<sup>23</sup> The basis for excluding these four companies is not further explained, but it is not likely to have a material effect on Operating Cost Allowances because the costs per customer of the companies just above the "lower quartile" are similar.

appropriately reflects both the uncertainty affecting our estimates, and the role of non-efficiency factors in driving variation in costs”.<sup>24</sup>

- This was then split between electricity and gas based on the operating cost allocation between the fuels for the suppliers which defined the lower quartile benchmark, resulting in an Operating Cost Allowance of £78.26 per electricity customer and £89.20 per gas customer.

The Operating Cost Allowance updates with inflation in each six-month period based on the level of CPIH observed during the preceding month of June (December) for periods beginning in October (April). The Operating Cost Allowance otherwise does not change over time.

### **2.2.2. Derivation of the headroom allowance**

Ofgem included £10 of headroom to the 2017 baseline value for the DTC on a dual fuel basis, equal to 1.46 per cent of the baseline tariff for a dual fuel direct debit (DD) customer with typical consumption, excluding network charges. This percentage (rather than the £10 used to derive it) is applied to the DTC excluding network costs in subsequent periods to set the headroom allowance.

In identifying a £10 headroom allowance, Ofgem considered the potential for upward and downward cost pressures not otherwise captured by the cap design. It also identified two other allowances for uncertainty included within the operating cost and wholesale cost allowances.

Between these two uncertainty allowances and the headroom allowance, Ofgem included £37 in allowances to “reflect uncertainty and the risk that an efficient supplier might incur costs above the ‘efficient frontier’ benchmark. This approach differs to that taken by the [CMA] in setting the [PCR], which set a competitive benchmark and added an explicit headroom allowance on top of this benchmark”.<sup>25</sup>

Ofgem concluded that this approach “provides an appropriate margin to enable suppliers to manage the net cost of risks that are outside their control”.<sup>26</sup>

## **2.3. Ofgem’s proposed approach to introducing a negative SMNCC**

When Ofgem extended the DTC to include PPM customers as of January 2021, it introduced the parameter for the SMNCC, but ultimately invoked a contingency plan to set it equal to zero for the first two cap periods (Periods Five and Six). Ofgem now proposes to include a negative SMNCC, although as we describe below, the net result of Ofgem’s methodology means that the SMNCC will be set to zero for electricity customers.

In this section, we briefly describe Ofgem’s methodology in defining the SMNCC (i.e. the non-passthrough SMNCC for PPM customers), and expand in more detail in Appendix A.

<sup>24</sup> Ofgem (6 November 2018), Default Tariff Cap: Decision, Appendix 6 – Operating costs, para. 2.30.

<sup>25</sup> Ofgem (6 November 2018), Decision – Default tariff cap – Overview Document, para. 2.90.

<sup>26</sup> Ofgem (18 May 2020), Protecting energy consumers with prepayment meters: May 2020 consultation, para. 2.13.

In short, the SMNCC is intended to capture the changes in efficient costs in each cap period relative to the efficient costs which are embedded in the Operating Cost Allowance (determined in 2017) and the PPM Uplift (based on data from 2014). To do so, Ofgem carries out the following steps:

1. It estimates an industry-wide roll-out profile, i.e. the share of PPMs in a given year which are smart versus traditional. This roll-out profile drives both (a) the workload and associated cost required to install new smart PPMs; and (b) the accumulated benefits associated with the total stock of smart PPMs relative to a counterfactual world with only traditional PPMs.

Taken together, these two dynamics create a non-linear cost trajectory for the smart meter roll-out, even if the roll-out profile is itself perfectly linear: in early years, an efficient supplier incurs the costs of the workload but benefits only from the few smart meters which have been installed thus far; in later years, an efficient supplier incurs similar costs of the workload, but benefits greatly from the large stock of smart meters that it has installed in all the preceding years.

2. Based on a Cost-Benefit Analysis (CBA) carried out by the Department for Business, Energy, and Industrial Strategy (BEIS), as well as various data collected from suppliers, Ofgem estimates a range of costs and benefits associated with a single smart meter relative to a traditional meter. These include: different asset installation costs and potential premature replacement charges (PRC) if a traditional meter has been removed early to make room for a smart meter (in-premises costs); maintenance costs; IT costs; other small line-item costs including organisational and marketing costs; and operational benefits (e.g. ease of billing and meter reading).
3. Combining the above two steps, Ofgem estimates the industry-wide Smart Meter Net Cost (SMNC) in a given year (note this is different from SMNCC, as it does not yet take into account the *change* in costs). Due to the non-linear dynamic described above, the SMNC is positive in earlier years of the roll-out (i.e. higher costs than a counterfactual with no roll-out), but drops or becomes negative in future years. We demonstrate this in Table 2.4 below.



**Table 2.4: Summary of Costs and Benefits (2017 £/customer)**

	2017	2018	2019	2020	2021	2022	2023
<b>Electricity</b>							
In-premises costs	2.63	5.05	4.89	3.45	6.27	8.84	10.67
O&M costs	0.89	1.30	1.54	1.38	1.41	1.15	1.36
IT costs	4.27	4.65	5.23	4.85	4.36	3.70	2.95
Organisational costs	0.39	0.39	0.38	0.38	0.36	0.35	0.35
Advertising costs	0.60	0.42	0.42	0.42	0.41	0.41	0.41
Other costs	0.53	0.80	0.96	0.87	0.88	0.93	0.90
Direct operational Benefits	-1.20	-1.97	-2.77	-3.15	-3.84	-5.75	-8.04
<b>Net cost to industry</b>	<b>8.12</b>	<b>10.65</b>	<b>10.65</b>	<b>8.21</b>	<b>9.87</b>	<b>9.64</b>	<b>8.60</b>
<b>Gas</b>							
In-premises costs	2.12	3.81	0.03	-4.04	-1.43	-0.55	-0.87
O&M costs	0.41	0.48	0.45	0.19	-0.17	-1.01	-1.44
IT costs	4.27	4.65	5.23	4.85	4.36	3.70	2.95
Organisational costs	0.39	0.39	0.38	0.38	0.36	0.35	0.35
Advertising costs	0.60	0.42	0.42	0.42	0.41	0.41	0.41
Other costs	0.53	0.79	0.95	0.87	0.88	0.92	0.89
Direct operational Benefits	-1.64	-2.70	-3.79	-4.30	-5.25	-7.89	-11.05
<b>Net cost to industry</b>	<b>6.68</b>	<b>7.85</b>	<b>3.67</b>	<b>-1.63</b>	<b>-0.83</b>	<b>-4.07</b>	<b>-8.75</b>

4. Ofgem then subtracts each year's SMNC from the SMNC it assumes to be embedded in the Operating Cost Allowance. This *change in costs* is the SMNCC, the parameter that Ofgem now proposes to introduce.

For example, if Ofgem estimated the SMNC to be £10 per customer in all years from 2017, then it would conclude that suppliers were already correctly remunerated for smart meter costs through the Operating Cost Allowance, which embeds £10 of smart meter costs. The SMNCC would thus be £0 for all subsequent years. If instead it found that the SMNC was £10 in 2017, £9 in 2018, £8 in 2019, and so on, it would apply an SMNCC of -£1 in 2018, -£2 in 2019, and so on. This is because the costs of smart meter roll-out are lower than the level assumed to be embedded in the Operating Cost Allowance. We demonstrate this calculation in Table 2.5 below.

**Table 2.5: Core SMNCC Calculation (nominal £/customer)**

	2018	2019	2020	2021	2022	2023
<b>Electricity</b>						
Net cost	10.65	10.65	8.21	9.87	9.64	8.60
- 2017 LQ net cost	7.41	7.41	7.41	7.41	7.41	7.41
- Payment type adjustment	3.49	3.49	3.49	3.49	3.49	3.49
Annual Core SMNCC (real 2017)	-0.25	-0.25	-2.69	-1.03	-1.26	-2.30
Inflation	102%	103%	105%	107%	109%	111%
<b>Annual Core SMNCC (nominal)</b>	<b>-0.25</b>	<b>-0.25</b>	<b>-2.82</b>	<b>-1.10</b>	<b>-1.36</b>	<b>-2.55</b>
<b>Gas</b>						
Net cost	7.85	3.67	-1.63	-0.83	-4.07	-8.75
- 2017 LQ net cost	6.01	6.01	6.01	6.01	6.01	6.01
- Payment type adjustment	6.11	6.11	6.11	6.11	6.11	6.11
Annual Core SMNCC (real 2017)	-4.27	-8.45	-13.75	-12.95	-16.19	-20.87
Inflation	102%	103%	105%	107%	109%	111%
<b>Annual Core SMNCC (nominal)</b>	<b>-4.34</b>	<b>-8.71</b>	<b>-14.41</b>	<b>-13.81</b>	<b>-17.57</b>	<b>-23.18</b>

5. Ofgem then applies additional adjustments to account for (a) sunk costs associated with COVID-19 (Sunk Costs Adjustment); (b) the SMNCC it believes should have been in place since January 2021 (Advanced Payments Adjustment, or APA); and (c) the possible underestimate of the PPM Uplift as estimated by the CMA (PPM Cost Offset). We demonstrate this calculation in Table 2.6 below.

**Table 2.6: Final SMNCC Calculation (nominal £/customer)**

	Cap 3	Cap 4	Cap 5	Cap 6	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<b>Electricity</b>									
Core SMNCC	-1.54	-2.82	-1.96	-1.10	-1.23	-1.36	-1.96	-2.55	-2.55
+ Sunk cost	0.30	0.60	0.60	0.60	0.30	0.00	0.00	0.00	0.00
+ Offset	8.39	8.44	8.46	8.51	8.51	8.51	8.51	8.51	8.51
+ APA					0.00	0.00	0.00	0.00	0.00
<b>= Final SMNCC</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Gas</b>									
Core SMNCC	-11.56	-14.41	-14.11	-13.81	-15.69	-17.57	-20.37	-23.18	-23.18
+ Sunk cost	0.41	0.81	0.81	0.82	0.41	0.00	0.00	0.00	0.00
+ Offset	9.47	9.52	9.55	9.60	9.60	9.60	9.60	9.60	9.60
+ APA					-1.18	-1.19	-1.21	-1.22	-1.22
<b>= Final SMNCC</b>	<b>-1.69</b>	<b>-4.08</b>	<b>-3.75</b>	<b>-3.39</b>	<b>-6.86</b>	<b>-9.16</b>	<b>-11.98</b>	<b>-14.80</b>	<b>-14.80</b>

## 2.4. Ofgem's Statutory Obligations and Assessment Criteria

In regulating the energy sector, Ofgem is subject to a range of statutory obligations and duties towards consumers and companies. The primary legislation underpinning the DTC, the Default Tariff Act, sets out the following requirement for Ofgem:

- (6) *The Authority must exercise its functions under this section with a view to protecting existing and future domestic customers who pay standard variable and default rates, and in so doing it must have regard to the following matters—*
- (a) *the need to create incentives for holders of supply licences to improve their efficiency;*
  - (b) *the need to set the cap at a level that enables holders of supply licences to compete effectively for domestic supply contracts;*
  - (c) *the need to maintain incentives for domestic customers to switch to different domestic supply contracts;*
  - (d) *the need to ensure that holders of supply licences who operate efficiently are able to finance activities authorised by the licence.*

### 2.4.1. Criteria of assessment

From Ofgem's obligations and duties set out above, we derive a set of assessment criteria against which we evaluate the DTC methodology, with specific focus on the SMNCC:

- *Cost reflectivity and recovery:* Any design of the DTC should ensure that an efficient supplier is able to recover its costs. Where the design fails to do so, either on a short-term or long-term basis, a supplier would be unable to finance its activities. This could result in a loss in competition, to the detriment of existing and future domestic customers who pay standard variable and default rates.
- *Incentives to compete:* Any design of the DTC should enable suppliers to compete effectively for customers, and to incentivise customers to actively search out more competitive suppliers. Where the design fails to do so, suppliers will be less likely to innovate to attract new customers and customers will have less choice, with rates likely to increase, to the detriment of existing and future domestic customers who pay standard variable and default rates.
- *Incentives to improve efficiency:* Any design of the DTC should ensure that suppliers have an incentive to improve efficiency. Where the design fails to do so, either on a short-term or long-term basis, the total cost to supply will not be minimised, to the detriment of existing and future domestic customers who pay standard variable and default rates.

### 3. Methodological Flaws of the Core SMNCC

We have reviewed the Disclosed Model and Disclosed Data that underpins it to verify whether it reflects the change in costs a typical supplier would incur relative to the efficient costs embedded in the Operating Cost Allowance and the PPM Uplift due to the smart meter roll-out.

In this chapter, we focus specifically on the “Core SMNCC”, i.e. before consideration of the APA or PPM Cost Offset. We consider these factors in Chapter 4.

In this section, we identify and quantify a range of methodological flaws and logical errors that Ofgem has embedded into its calculation of the SMNCC. As a result of these errors, the Core SMNCC is materially overstated.

This chapter proceeds as follows:

- In Section 3.1, we describe the overall quality of the modelling and find that it is difficult to have confidence in the numbers it produces;
- In Section 3.2, we set out and quantify a range of errors Ofgem has made with respect to savings in In-Premises Costs;
- In Section 3.3, we set out and quantify a range of errors Ofgem has made with respect to the Cost-to-Serve Benefit;
- In Section 3.4, we describe how Ofgem’s methodology overstates the level of smart meter costs embedded in the Operating Cost Allowance, because it uses the assumed costs of a fictional “lower quartile” supplier rather than those of the actual supplier that set the Operating Cost Allowance; and
- In Section 3.5, we calculate the total quantum of the errors identified above and conclude.

#### 3.1. The Model is Difficult to Appraise and Contains Numerous Calculation Errors

While the majority of our work focusses on identifying material errors and logical inconsistencies, we are unlikely to have identified all of them due to the unnecessary complexity of Ofgem’s model. Ofgem spent almost an additional year reviewing the model and methodology before re-consulting on the proposed SMNCC, and yet it remains opaque. As such, we find that Ofgem has no basis to use its model to justify a decision that could adversely discriminate against some supplier business models.

For Ofgem to justify such an outcome, it is imperative that the model and its workings are clear and understandable. That is not the case here and Ofgem should now provide further explanations to enable more meaningful review of certain elements that we have been unable to assess further. For instance:

- Some assumptions, such as the trajectory of installation productivity, are apparently derived from bilateral conversations with suppliers, but Ofgem has not provided any detail on those conversations and how an assumption derives from them;

- A key driver of the level of the SMNCC is the level of smart meter rollout costs embedded in the Operating Cost Allowance, but Ofgem has provided almost no detail on the actual cost structure of the firm(s) which set the Operating Cost Allowance.

Moreover, through its consultation and apparent lack of checking, Ofgem has caused suppliers and other interested parties to incur substantial time and cost in responding to a consultation that is based on a model that is apparently unchecked, unfinished, and flawed.

Possibly in response to feedback in the Statutory Consultation in 2020, Ofgem claims to “have made some changes to simplify the model, so that it is more user-friendly for a series of annual reviews”. For example, it “made structural changes to reduce the number of input sheets”.<sup>27</sup>

Our response to the Statutory Consultation on behalf of Utilita raised many concerns about the structure and clarity of the model, many of which have not been addressed in the current form of the model, but without explanation for not doing so. For example:

- We criticised the unnecessary size of the model, with 58 separate worksheets. The model still contains 58 separate worksheets, and the roll-out profile is calculated over four separate sheets containing roughly 2,000 rows of calculations. Suppliers who stand to lose substantial revenues as a result of the design and operation of this model are entitled to clarity as to the out-turn of its operation.
- The previous version appeared to be in draft form, containing numerous notes which appeared to be exchanges between members of the modelling team, and incomplete explanations of the various calculations and inputs. Most of these comments have been removed but some remain. For example, several sets of inputs are categorised as “Things that don’t fit elsewhere”.<sup>28</sup> This leads to a lack of confidence in the model, on top of the complexity that remains. Indeed, that complexity heightens our concerns as to the risk of additional errors not identified in this report. It is presently impossible to assess the likelihood of scale of such errors.

Additionally, the modelling contains several minor calculation errors, some of which we identified in response to the Statutory Consultation. For example:

- In calculating reductions in O&M costs due to smart meter rollout, Ofgem continues to double-count the savings on traditional meters which are replaced with SMETS1 meters which are then replaced with SMETS2 meters.
- In calculating reductions in O&M costs due to smart meter rollout, Ofgem applies a 10 per cent “optimism bias” adjustment in the wrong direction, suggesting that suppliers can save 10 per cent *more* rather than less than they forecast.

There may be other sources of error throughout the model, but we have not conducted a detailed audit of the calculations. In any event, the model as provided represents an unreliable basis for setting the SMNCC. It should not be used as a basis for further capping supplier costs for recovery through charges.

<sup>27</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, paras. 3.90-3.91.

<sup>28</sup> Disclosed Model, “Installation costs”, Row 149.

### 3.2. In-Premises Costs are Understated

Ofgem states that “the majority of suppliers’ costs relate to the net impact on operating costs of replacing traditional PPMs with smart meters (in-premises costs)”.<sup>29</sup> These in-premise costs include four components: net asset costs, PRCs, avoided costs of rental payments of prematurely replaced meters, and net installation costs.

Our analysis shows that Ofgem’s approach to calculating each of these four components of in-premises costs contains methodological flaws, the combined effect of which is that Ofgem understates in-premises costs and thus overstates the savings from smart metering (i.e. overstates the magnitude of the SMNCC). We highlight four methodological flaws in greater detail in this section, though this is by no means an exhaustive list.

- In Section 3.2.1 we show that Ofgem has underestimated the asset age profile for traditional PPMs, which affects the calculation of net asset costs. This error causes Ofgem to overstate the magnitude of the SMNCC.
- In Section 3.2.2.1 we show that Ofgem has made two errors in its calculation of PRCs and avoided costs of rental payments. First, Ofgem underestimates the period of liability for PRCs and rental payments. Second, Ofgem overestimates the value of PRCs for gas. The combined effect of these errors is that Ofgem overstates the magnitude of the SMNCC.
- In Section 3.2.3 we show that Ofgem has made unjustified productivity improvement assumptions that it applies to the policy scenario only, which cause it to underestimate the net installation costs of smart meters. The inclusion of these unjustified assumptions causes Ofgem to overstate the magnitude of the SMNCC.
- In Section 3.2.4 we show that Ofgem has made an unreasonable and unjustified assumption that most expired In-Home Displays (IHDs) are not replaced, which contradicts BEIS’s policy position and overstates the magnitude of the SMNCC.

#### 3.2.1. Ofgem underestimates the asset age profile for traditional PPMs, therefore overestimating the cost of the counterfactual

Ofgem assumes an asset life of 14 years for electricity PPMs and 12 years for gas PPMs.<sup>30</sup> Our analysis of the supplier data shows that this is an underestimate. Ofgem’s approach to selecting an asset life assumption based on the supplier data is ad hoc at best and exhibits inconsistencies between electricity and gas. The supplier data shows that the only reasonable assumption is to set the asset life to at least 15 years for both electricity and gas PPMs, and potentially longer for electricity PPMs.

Compared to the supplier data, Ofgem’s asset life assumptions cause it to overestimate the proportion of meters at or younger than a given age, for every age.<sup>31</sup> This can be seen from Figure 3.1 and Figure 3.2 below, which plots the proportion of traditional PPMs less than or

<sup>29</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para 3.3.

<sup>30</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para 4.13.

<sup>31</sup> The supplier data is from 2018.

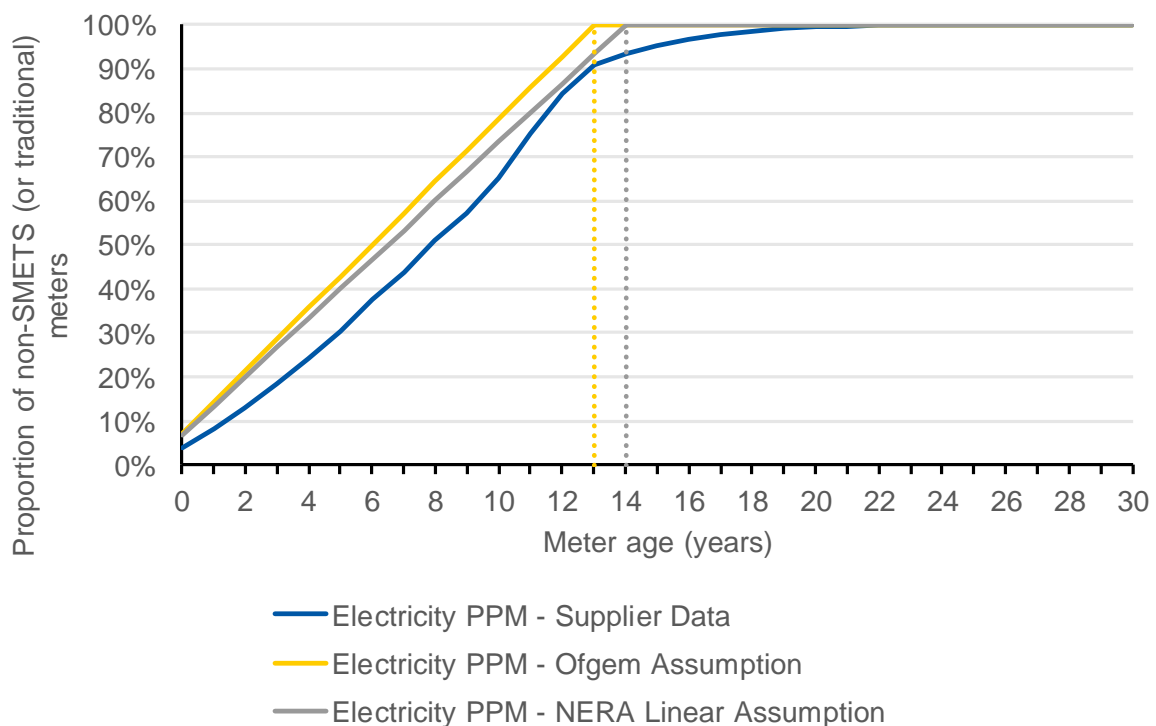
equal to a given age.<sup>32</sup> Ofgem’s assumed age profile (in yellow) is always above the actual age profile from the supplier data (in blue), meaning that its approach underestimates the age profile of traditional PPMs. For example, Ofgem assumes that only 58.3% of gas meters are more than 5 years old, when the supplier data shows that 68.6% are more than 5 years old.

The main impact of this error is that Ofgem overestimates the cost of the Counterfactual scenario. The Counterfactual becomes more costly when the traditional meter age is underestimated because suppliers must replace meters more frequently, and meter replacement is costly. Since Ofgem overestimates the counterfactual cost, it also overestimates the savings from smart metering.

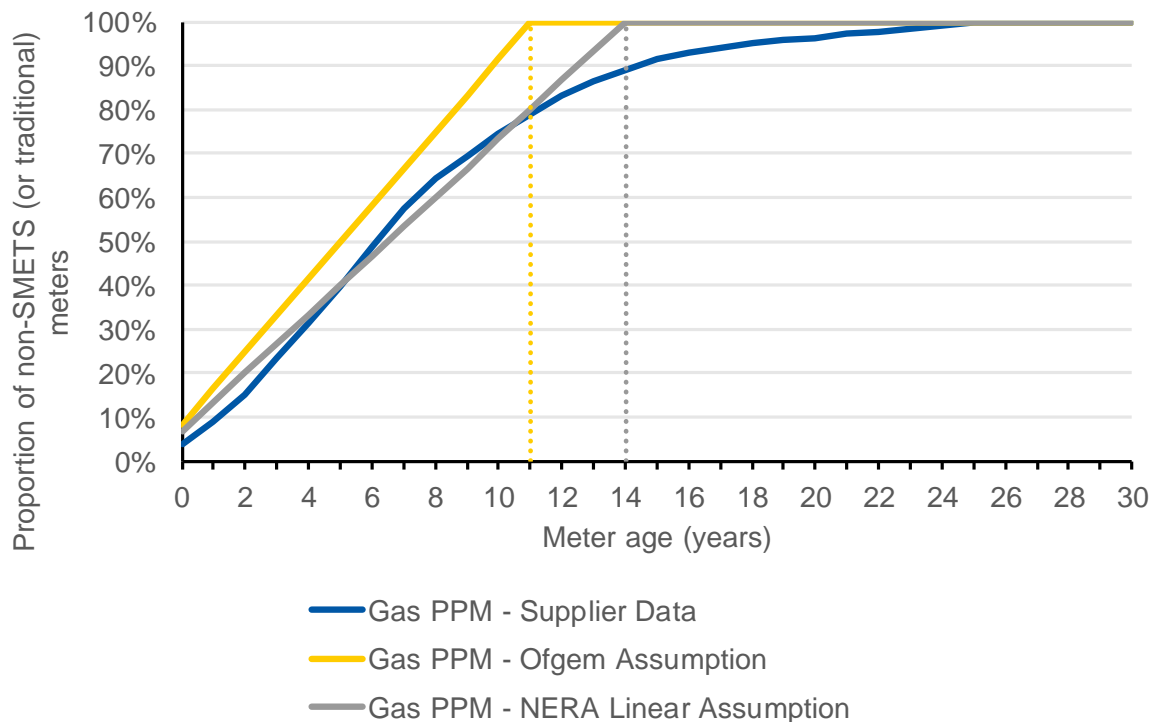
Our analysis of supplier data indicates that a reasonable asset life assumption is at least 15 years for both gas and electricity. Assuming a 15-year asset life brings the assumed age profile for traditional meters closer to the age profile in the supplier data, as seen in Figure 3.1 and Figure 3.2.

Our estimate remains conservative for electricity. We still overestimate the proportion of meters at or below a given age, for every age. This can be seen from Figure 3.1, where our assumed age profile (in grey) is always above the blue line that reflects the supplier data. Arguably, a 16-year asset life could be more appropriate, but we propose a 15-year asset life for consistency across fuels and with the PRC methodology.

**Figure 3.1: Ofgem Underestimates the Age Profile of Traditional Electricity PPMs**



<sup>32</sup> These figures follow the supplier data by “rounding down” the meter age. A meter of age 13.9 years will be recorded as being of age 13 years. In Figure 3.1, then, Ofgem’s assumed age profile shows that all meters are at or below 13 years, because the maximum meter age is 14 years and a meter of 13.9 years is recorded as being 13 years old.

**Figure 3.2: Ofgem Underestimates the Age Profile of Traditional Gas PPMs**

Source: NERA analysis of Disclosed Data

Ofgem's method for selecting its 12- and 14-year asset life assumptions is ad hoc at best and involves clear errors and inconsistencies:<sup>33</sup>

- First, Ofgem relies on plots of the proportion of meters at a given age (i.e. a probability density function, or PDF) rather than plots of the proportion of meters *at or below* a given age (i.e. a cumulative distribution function, or CDF). Using a CDF instead allows us to ensure that discrepancies between the actual and assumed distributions at different ages balance out across the full age profile, which is difficult to achieve with a PDF.
- Second, Ofgem does not try to fit an actual distribution to the supplier data. It uses an ad hoc approach of selecting a point at which the profile appears to begin to decline and a point at which the profile appears to level out, and then takes the midpoint between them. This ad hoc approach has no basis in standard statistical practice (as compared to trying to fit a distribution) and results in inconsistencies between electricity and gas. For example, Ofgem sets the leveling point of gas where there are 1 per cent of meters at that age, but the leveling point of electricity where there are 1.5 per cent of meters at that age. Using 1 per cent for both would result in a 15-year asset life for electricity.

Suppliers are entitled to expect a high degree of rigour and care when an economic energy regulator is proposing to cap suppliers' ability to recover costs.

<sup>33</sup> Ofgem (20 November 2020), Setting the PPM smart meter cost allowance in the default tariff cap – working paper. Appendix 2.



The impact of replacing the asset life assumption with 15 years in both cases is reported in Table 3.1.

**Table 3.1: Increasing Traditional PPM Lives to 15 Years Reduces Smart Meter Savings**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<i>Ofgem SMNCC</i>					
Electricity	-0.93	-1.36	-1.96	-2.55	-2.55
Gas	-15.28	-17.57	-20.37	-23.18	-23.18
<i>Corrected SMNCC</i>					
Electricity	-0.69	-1.09	-1.65	-2.21	-2.21
Gas	-13.69	-15.72	-18.26	-20.80	-20.80
<i>Delta</i>					
<b>Electricity</b>	<b>0.24</b>	<b>0.27</b>	<b>0.31</b>	<b>0.34</b>	<b>0.34</b>
<b>Gas</b>	<b>1.59</b>	<b>1.84</b>	<b>2.11</b>	<b>2.38</b>	<b>2.38</b>

Source: NERA analysis of SMNCC Model

### 3.2.2. Ofgem's calculation of PRCs and avoided rental payments involves at least two errors

There are at least two errors in Ofgem's calculation of PRCs and avoided rental payments.

- Ofgem underestimates the period of supplier liability for rental payments and PRCs on traditional PPMs. Ofgem assumes a ten-year period of liability, but the period of liability derived from the supplier data is closer to the typical 15-year lifetime of a traditional PPM.
- Ofgem overestimates the level of PRCs for traditional gas PPMs. Ofgem assumes that PRCs for traditional gas PPMs at age zero are on average £236.06 in 2011 prices, but the supplier data indicates that they are on average £180.72.

#### 3.2.2.1. Ofgem underestimates the period of liability for rent and PRCs on traditional PPMs

Ofgem assumes that suppliers are liable for rent and PRC payments on both gas and electricity traditional PPMs until they are ten years old.<sup>34</sup> This is an underestimate. Our analysis of the supplier data shows that the term of PRC and rent liability matches up relatively closely with the typical 15-year lifetime of a PPM.

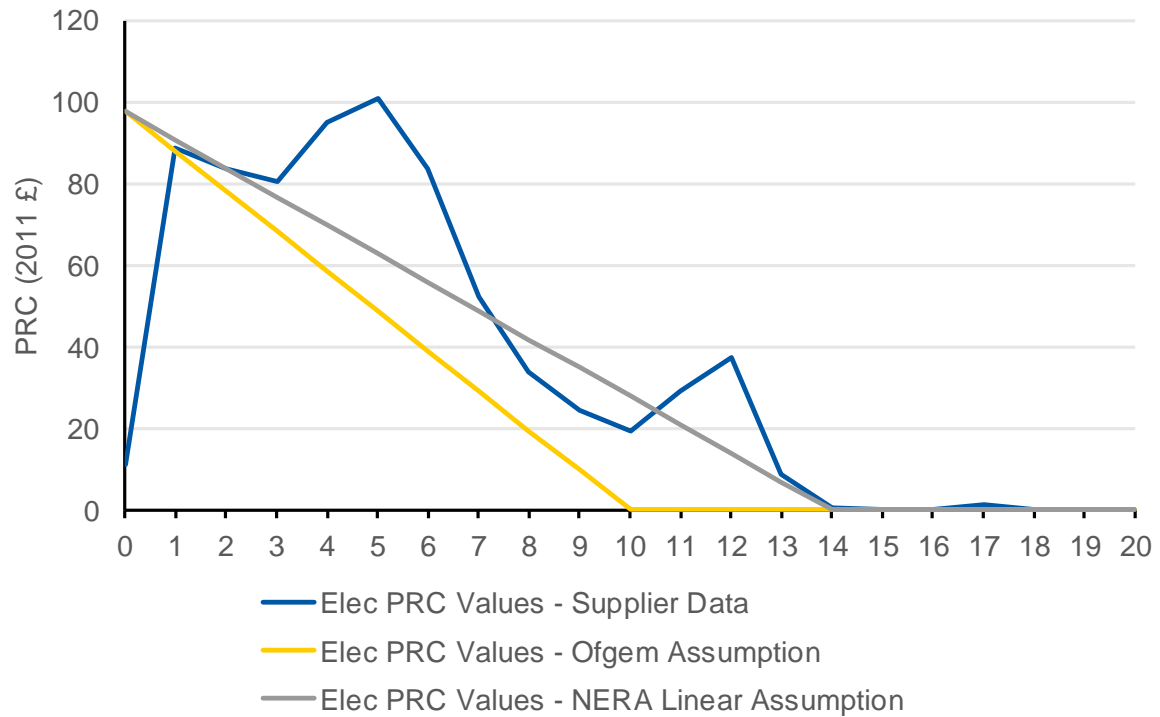
Figure 3.3 shows the profile of PRC payments for traditional electricity PPMs as derived from the supplier data.<sup>35</sup> It is clear that suppliers pay PRCs on electricity meters up to at least

<sup>34</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para 4.14 and 4.15, p. 42

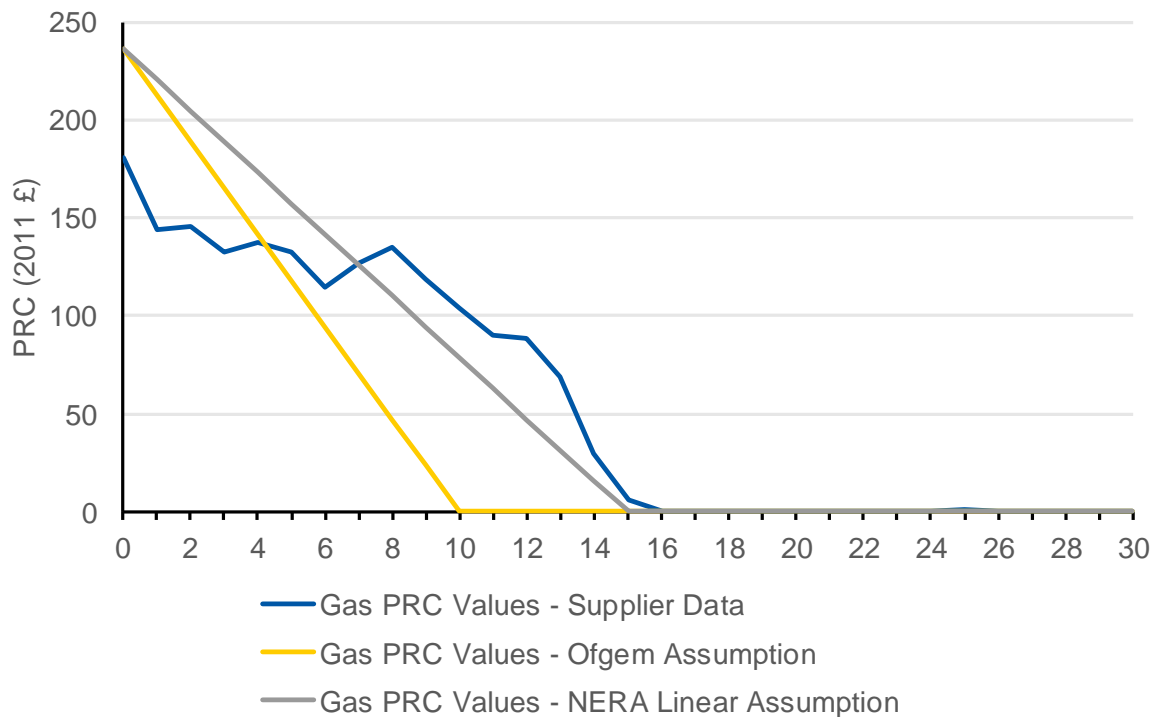
<sup>35</sup> The PRC values in the supplier data are low at age zero, as compared to at other ages. We consider that this may be due to suppliers including replacements of malfunctioning meters, for which no PRC would be paid, in the total count of meters replaced prematurely. The phrasing of the question in the RFI is "Please provide the number of meters of each age you replaced prematurely in 2017 and 2018... [and] the total amount of PRCs incurred".

age 14.<sup>36</sup> Figure 3.4 shows the profile of PRC payments for traditional gas PPMs from the supplier data. We see that suppliers pay PRCs on gas meters up to at least age 15.

**Figure 3.3: Suppliers Pay PRCs on Electricity PPMs Until Age 14**



<sup>36</sup> These figures follow the supplier data by “rounding down” the meter age. A meter of age 13.9 years will be recorded as being of age 13 years.

**Figure 3.4: Suppliers Pay PRCs on Gas PPMs Until Age 15**

Source: NERA analysis of Disclosed Data

Across both electricity and gas traditional PPMs, we find that Ofgem underestimates the period of liability for rent and PRC payments. We can see no justification for this and Ofgem has provided none. This under-estimation has a variety of effects on the SMNCC, running in both directions.

- It causes Ofgem to understate the costs of the policy scenario (with smart meters) towards the beginning of the cap, as it underestimates the magnitude of PRC payments for replacing traditional meters with smart meters. This causes an overestimate of the savings from smart metering.
- It causes Ofgem to overestimate the costs of the policy scenario (with smart meters) towards the end of the cap, as it underestimates the savings from avoided rental payments on traditional meters. This causes an underestimate of the savings from smart metering.
- It causes Ofgem to overestimate the costs of the counterfactual scenario (without smart meters) in each year, because it spreads the required rental payment amount for each meter over too few years. This causes an overestimate of the savings from smart metering.

We assess the impact of revising the PRC profile by comparing the estimated SMNCC using our revised PRC profile and age profile to the estimated SMNCC using our revised age profile (i.e. 15 years for each fuel). We do this because it is not logically consistent to assume that PRC payments are due for 15 years on gas meters while also assuming that gas meters have a lifetime of 12 years.

The impact of revising the PRC profile is shown in Table 3.2. Overall, the combined impact of the various effects listed above is that Ofgem overstates the savings from smart metering (i.e. overstates the magnitude of the SMNCC). The impact is greatest toward the beginning of the cap. This is consistent with there being an upfront cost in the policy scenario due to increased PRC payments, and a delayed benefit in the policy scenario due to avoided rent payments on traditional meters.

**Table 3.2: Increasing the Period of PRC/Rent Liability Reduces Smart Meter Savings**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<i>SMNCC with age profile only corrected</i>					
Electricity	-0.69	-1.09	-1.65	-2.21	-2.21
Gas	-13.69	-15.72	-18.26	-20.80	-20.80
<i>SMNCC with age and PRC profile corrected</i>					
Electricity	0.47	0.21	-0.47	-1.15	-1.15
Gas	-8.95	-10.51	-13.60	-16.70	-16.70
<i>Delta</i>					
<b>Electricity</b>	<b>1.16</b>	<b>1.30</b>	<b>1.18</b>	<b>1.06</b>	<b>1.06</b>
<b>Gas</b>	<b>4.74</b>	<b>5.22</b>	<b>4.65</b>	<b>4.09</b>	<b>4.09</b>

Source: NERA analysis of SMNCC Model

### 3.2.2.2. Ofgem overestimates the level of PRC payments for gas PPMs

Ofgem assumes the average level of PRC payments for traditional gas PPMs at age zero is £236.06 (2011 GBP). This is an overestimate. Our analysis of the supplier data on PRCs shows that the average level of PRC payments for traditional gas PPMs at age zero is £180.72.

Since Ofgem uses the value of the PRC at age zero to set the value for the PRC in each subsequent year, overestimating the PRC at age zero causes Ofgem to overestimate the PRC for a greater part of the age distribution. This can be seen in Figure 3.4. Ofgem overestimates the PRC until age 5.

The problem is that Ofgem does not use the supplier data on PRCs to calculate the initial value of PRCs. Instead, Ofgem combines asset and installation costs for a new meter, derived from the BEIS 2019 cost-benefit analysis, with an assumed meter rental uplift (MRU). Ofgem calculates the MRU using the supplier data on meter rental payments. For electricity, Ofgem's approach results in assumed PRC values that are close to the actual PRC values, but for gas, the results are substantially different.

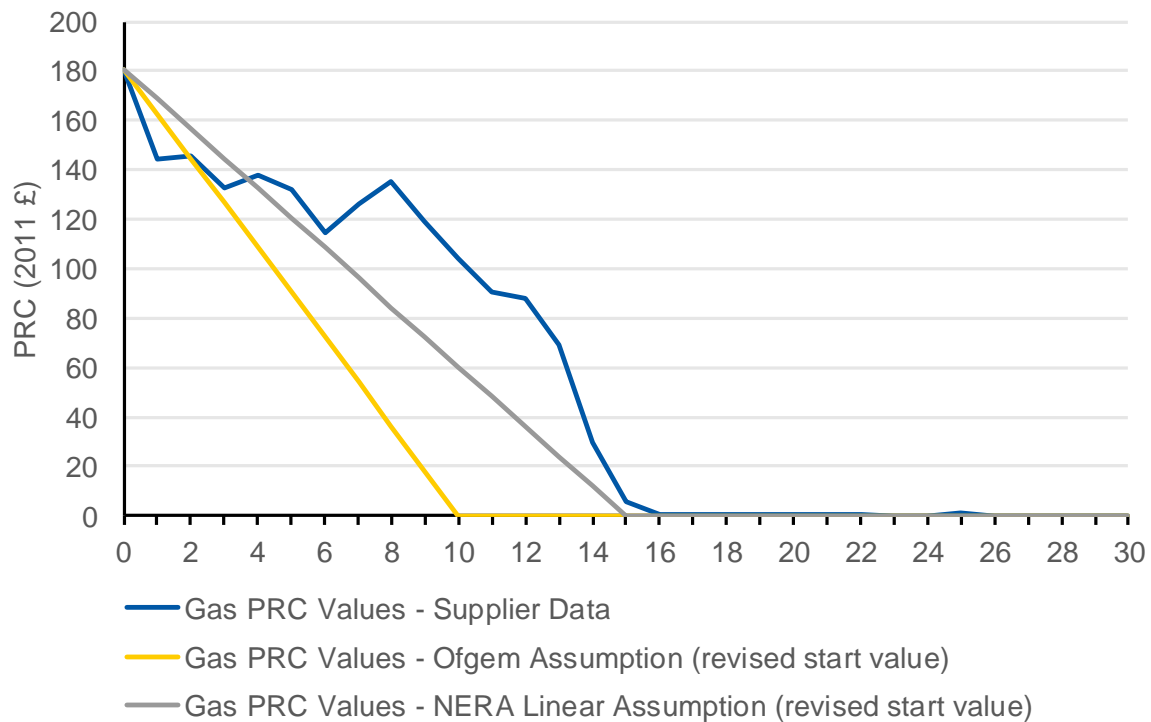
Ofgem does not explain why it adopts this approach to calculating PRCs, which relies on a number of implicit and unsubstantiated assumptions about how meter asset providers set PRCs, rather than using the supplier data it collected. Given the availability of the supplier data on PRC payments, Ofgem's approach adds unnecessary complexity to the SMNCC calculation.

To address the problem that Ofgem's assumed PRCs for traditional gas PPMs at age zero are too high, we impose a starting value for the PRC equal to the starting value from the supplier

PRC data, i.e. £180.72. This results in an assumed PRC profile that is a much better fit to the data, as seen in Figure 3.5.

The impact of correcting the opening PRC value on the SMNCC can be seen in Table 3.3. The savings from smart metering are higher when the gas PRC value is corrected than when the period of liability only is corrected. Overall, the combined effect of both errors is that Ofgem has overstated the SMNCC.

**Figure 3.5: We Adjust the Starting PRC Value for Gas to Reflect Supplier PRC Data**



**Table 3.3: We adjust the Starting PRC Value for Gas to Reflect Supplier PRC Data**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<i>SMNCC with age profile only corrected</i>					
Electricity	-0.69	-1.09	-1.65	-2.21	-2.21
Gas	-13.69	-15.72	-18.26	-20.80	-20.80
<i>SMNCC with age, PRC profile, and gas PRC corrected</i>					
Electricity	0.47	0.21	-0.47	-1.15	-1.15
Gas	-10.75	-12.59	-15.61	-18.64	-18.64
<i>Delta</i>					
<b>Electricity</b>	<b>1.16</b>	<b>1.30</b>	<b>1.18</b>	<b>1.06</b>	<b>1.06</b>
<b>Gas</b>	<b>2.94</b>	<b>3.14</b>	<b>2.65</b>	<b>2.16</b>	<b>2.16</b>

Source: NERA analysis of SMNCC Model

### 3.2.3. Ofgem assumes unjustified productivity improvements that cause it to underestimate the total cost of smart meter installations

Ofgem assumes that there will be productivity improvements in smart meter installations from 2019 onwards, which reduce the cost of smart meter installations.<sup>37</sup> The assumed productivity improvements are poorly explained and inconsistent with existing supplier data. In other words, they are not supported by the evidence Ofgem relies on.

The supplier data shows that the weighted average of installation costs rose from 2016 through 2019, which is the last available year of the supplier data.<sup>38</sup> This can be seen in Figure 3.6. One reason for the rising costs is falling productivity: on average, installers completed 3.4 installations per day in 2017, 3.0 installations in 2018, and 2.8 installations in 2019.<sup>39</sup>

Based on this supplier data, it would be reasonable to assume that installation costs will continue to rise after 2019. Ofgem itself notes that “one supplier anticipated that under the new BEIS smart meter policy framework the incremental cost of installations is likely to increase [...] due to suppliers looking to adopt additional measures to address customer engagement challenges”.<sup>40</sup>

Instead, Ofgem assumes that the increasing trend in installation costs is reversed from 2019 onwards. Ofgem’s initial installation cost numbers are shown in Figure 3.6; it has subsequently replaced the installation cost numbers for 2020 and 2021 with higher numbers based on RFI data.<sup>41</sup> The revised assumptions are shown in Figure 3.7. Ofgem does not explain how it calculated the new numbers for 2020 and 2021 from RFI data and has not provided that data to us.

<sup>37</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para 3.49.

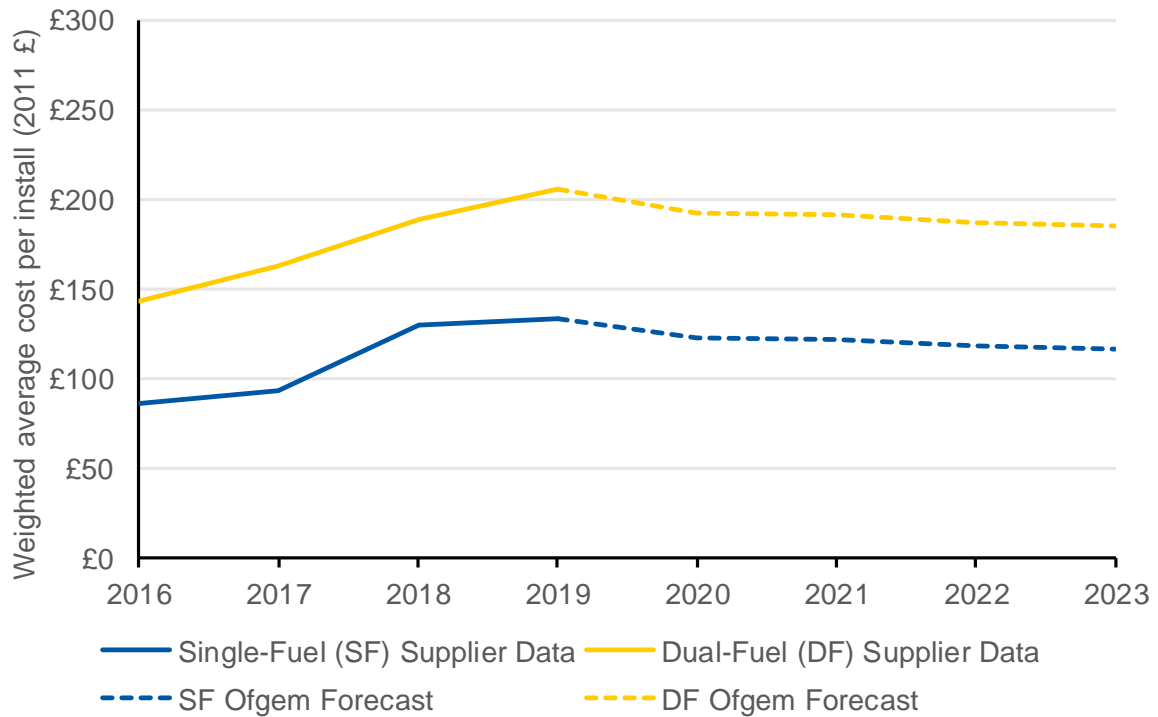
<sup>38</sup> We focus on the weighted average of installation costs here, but the lower quartile has a similar profile.

<sup>39</sup> Ofgem SMNCC data, “1. ASR model – April 2021.xlsx”, tab “Ofgem >> Productivity – BEIS new”, line 122.

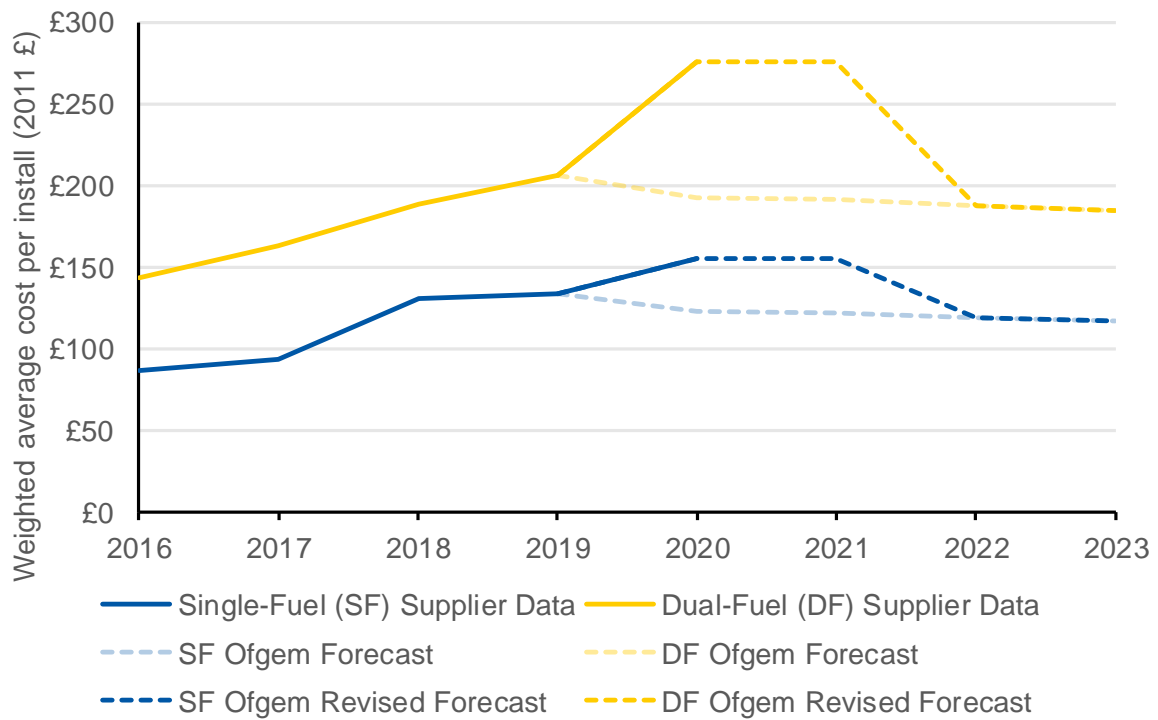
<sup>40</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para 6.79.

<sup>41</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, paras 3.56-3.58.

**Figure 3.6: Ofgem Assumes that Rising Installation Costs are Reversed from 2019 Onwards**



**Figure 3.7: Ofgem Revised its Installation Cost Forecasts for 2020 and 2021**



Source: NERA analysis of Disclosed Data

To calculate the installation cost numbers in Figure 3.6, Ofgem uses the real-terms installation costs for 2019, adjusted downwards for assumed annual improvements in productivity. Ofgem makes two productivity improvement assumptions:

- Ofgem assumes that real-terms training costs fall by 39 per cent from 2019 to 2020, and then remain constant at their 2020 level. This assumption is based on “projections”, which Ofgem does not explain further and for which no evidence is provided.
- Ofgem assumes that operational fulfilment (i.e. the number of installations per day) increases by 7 per cent from H2 2021 through H2 2022.<sup>42</sup> This assumption comes from the BEIS Smart Meter Policy Framework Post 2020 consultation document, published in November 2020. That document justifies the 7 per cent figure as “based on information provided by large energy suppliers during bilateral meetings” and “improvements demonstrated by some energy suppliers to date”.<sup>43</sup>

Neither of these assumptions is justified and the information relied on has not been provided.

Staff turnover in the meter installation workforce means that suppliers face ongoing requirements to train new installers. Suppliers also face ongoing training costs associated with revisions to installation processes and technology updates. There is therefore no reason to assume that training costs will fall in real terms.

Neither Ofgem nor BEIS has provided any evidence to support the claim that operational fulfilment should improve from H2 2021 through H2 2022. In the absence of any data to support this assumption provided by either Ofgem or BEIS, or any evidence of widespread process improvements that allow individual smart meter installers to achieve 7 per cent productivity improvements within a single year, its inclusion is not justifiable and should be removed from the modelling.

These assumptions are particularly unjustifiable given that Ofgem does not make similar assumptions for the installation costs of traditional meters.<sup>44</sup> This inconsistency means that Ofgem imposes a stricter efficiency requirement on suppliers under the Policy scenario (with smart meters) than under the Counterfactual scenario.

The unjustified assumption of productivity improvements in installation costs causes Ofgem to underestimate the costs of the Policy scenario. This causes Ofgem to overestimate the savings from smart metering.

The assumed productivity improvements should be removed from the model. For 2020 and 2021, we retain the numbers that Ofgem has provided as they are based on the most recent supplier data from February 2021 (although that data has not been shared with us).

Recognising that the 2020 and 2021 figures may be distorted upwards due to COVID-19, we do not use these figures to set installation costs for 2022 and 2023. Instead, we hold installation costs constant at their 2019 levels. Given the trajectory of worsening productivity up to 2019, our alternative assumption is in fact optimistic relative compared to a continued upward cost trend which could be justified by the historical data.

<sup>42</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para 3.67-3.72, p. 32

<sup>43</sup> BEIS (November 2020), Smart Meter Policy Framework Post 2020: Minimum Annual Targets and Reporting Thresholds for Energy Suppliers, para. 54

<sup>44</sup> Ofgem, “SMNCC Model v5 – to disclose April 2021.xlsx”, tab “Inputs – costs (live)”, line 185:201



We show the impact of these corrections to the model in Table 3.4.

**Table 3.4: Removing Ofgem's Unjustified Productivity Improvement Assumption Reduces Smart Meter Savings**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<i>Ofgem SMNCC</i>					
Electricity	-0.93	-1.36	-1.96	-2.55	-2.55
Gas	-15.28	-17.57	-20.37	-23.18	-23.18
<i>Corrected SMNCC</i>					
Electricity	-0.79	-1.09	-1.51	-1.93	-1.93
Gas	-15.16	-17.32	-19.97	-22.62	-22.62
<i>Delta</i>					
<b>Electricity</b>	<b>0.14</b>	<b>0.27</b>	<b>0.45</b>	<b>0.62</b>	<b>0.62</b>
<b>Gas</b>	<b>0.12</b>	<b>0.24</b>	<b>0.40</b>	<b>0.56</b>	<b>0.56</b>

Source: NERA analysis of SMNCC Model

### 3.2.4. Ofgem's assumed replacement rate for expiring IHDs is unjustified

Ofgem assumes that only 33 per cent of expiring IHDs are replaced, and by implication assumes that 67 per cent of homes would instead have no IHD.<sup>45</sup> As we discuss below, this appears to be an underestimate of the proportion of expiring IHDs replaced with new IHDs, causing Ofgem to underestimate the cost of the Policy scenario.

An assumption that most expiring IHDs are replaced with new IHDs is consistent with BEIS' policy conclusions from its 2019 evaluation of alternatives to IHDs. BEIS found that the smartphone-based alternatives were "likely to be less effective than IHDs at reducing customers' energy consumption" and therefore did not amend the mandate for suppliers to offer IHDs to domestic customers at no additional charge.<sup>46</sup>

Ofgem's assumption is not discussed in the SMNCC consultation document, nor is it explained in the SMNCC model. The SMNCC model gives the 2019 BEIS CBA as a source for the IHD replacement rate. This appears to derive from the 2016 BEIS CBA, which assumes that two-thirds of customers would switch to smartphone-based IHD alternatives upon expiry of their IHD.<sup>47</sup> The results of BEIS' 2019 evaluation of alternatives to IHDs directly contradicts this.

Since BEIS' more recent recommendation from 2019 suggests a continued policy preference for IHDs over smart meter alternatives, the modelling should account for this by assuming that all expiring IHDs are replaced by new IHDs. In Table 3.5 we show the impact on SMNCC of increasing the replacement rate of IHDs to 100 per cent. Ofgem's assumption that only 33 per cent of expiring IHDs are replaced causes it to overstate the magnitude of the SMNCC.

<sup>45</sup> Ofgem, "SMNCC Model v5 – to disclose April 2021.xlsx", tab "Inputs – costs (live)", line 234

<sup>46</sup> BEIS (September 2019), Smart metering implementation programme: Policy conclusions following energy suppliers' trials of alternatives to in-home displays, p. 8

<sup>47</sup> BEIS (August 2016), Smart meter roll-out cost-benefit analysis Part 1, p. 28

**Table 3.5: Replacing All Expiring IHDs Reduces Smart Meter Savings**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<i>Ofgem SMNCC</i>					
Electricity	-0.93	-1.36	-1.96	-2.55	-2.55
Gas	-15.28	-17.57	-20.37	-23.18	-23.18
<i>Corrected SMNCC</i>					
Electricity	-0.84	-1.19	-1.68	-2.16	-2.16
Gas	-15.19	-17.39	-20.09	-22.79	-22.79
<i>Delta</i>					
<b>Electricity</b>	<b>0.09</b>	<b>0.17</b>	<b>0.28</b>	<b>0.39</b>	<b>0.39</b>
<b>Gas</b>	<b>0.09</b>	<b>0.17</b>	<b>0.28</b>	<b>0.39</b>	<b>0.39</b>

Source: NERA analysis of SMNCC Model

### 3.3. Cost to Serve Savings are Overstated

As described in Section A.2, PPM suppliers are assumed to save money due to the reduced cost to serve customers with a smart meter relative to a traditional meter. To estimate the reduction in cost-to-serve (CTS), Ofgem multiplies a unit cost savings per customer by the rollout profile.

Ofgem's method for estimating unit cost savings per customer is biased upwards and does not reflect the actual reduction in costs that could be achieved by switching one traditional customer to a smart meter. Ofgem's approach for each fuel is as follows, as derived from the supplier data:

- Separately for each supplier serving at least 1 per cent of the PPM market, Ofgem collects: (i) total CTS for traditional PPM customers; (ii) total number of traditional PPM customers; (iii) total CTS for smart PPM customers; and (iv) total number of smart PPM customers;
- It calculates each supplier's average cost to serve (a) a traditional PPM customer (i.e. (i)/(ii) in the step above) and (b) a smart PPM customer (i.e. (iii)/(iv) above);
- It calculates each supplier's difference in cost to serve each customer type (i.e. (a) - (b) in the step above); and
- It calculates the industry average difference, weighted by each supplier's total number of PPM customers.

From this approach, it estimates that suppliers save £15.43 (electricity) and £21.22 (gas) per switched customer, in 2019 GBP.

Ofgem's approach is flawed and biased for three reasons:

- It assumes without justification that suppliers' average CTS per customer of each type is representative of the CTS that could be saved by switching one customer from a traditional meter to a smart meter;
- It combines the supplier data in a way that places excessive importance on small customer groups with unrepresentative costs; and

- It includes data from Utilita, a smart PPM specialist whose cost to serve traditional customers is not reflective of what the industry could save relative to the costs embedded in the Operating Cost Allowance. Its inclusion of Utilita for this purpose is inconsistent with its approach elsewhere in the application of the model (e.g. Utilita is excluded from the historical rollout profile). It should be excluded also from this aspect of the analysis.

We expand on each of these points in the subsections below and derive alternate assumptions which correct the flaws embedded in them.

### **3.3.1. The difference in unit costs is a poor proxy for the potential to save relative to the Operating Cost Allowance**

Broadly speaking, Ofgem assumes that the difference in cost each supplier incurs to serve each customer type in 2019 (the vintage of the cost data underpinning its calculations) is reflective of the savings that suppliers have achieved and will continue to achieve from customer switching from 2017 to the end of the DTC period. It refers to this calculation as the “CTS benefit”.

In order for Ofgem’s “CTS benefit” methodology to be valid, it would need to make two assumptions which are unlikely to hold.

First, Ofgem assumes that suppliers must incur a set level of costs which can be allocated to a specific customer with no additional overhead costs, and therefore that these costs would be avoided by switching the customer. In reality, some element of suppliers’ costs is likely to be fixed in total, and hence decreasing on a per-customer basis as the customer base grows.

The relationship can be clearly seen in the supplier data: suppliers with a low proportion of customers on traditional meters tend to have a relatively high cost to serve those customers on a per-customer basis. Suppliers’ reported cost to serve across different customer types likely reflects substantial overhead costs which increase on a per-customer basis as the number of customers decreases.

Second, Ofgem uses a 2019 estimate of the CTS benefit to apply to the rollout since 2017. To do so, Ofgem must assume that the unit cost to serve each customer type at a single point in time (2019) reflects the unit costs incurred by the benchmark supplier at a different point in time (2017, i.e. the vintage of the data underpinning the Operating Cost Allowance).

In reality, CTS per traditional customer has likely increased because: (a) traditional CTS overheads are spread over fewer traditional customers (as demonstrated above); and (b) the remaining traditional customer base may be systematically more expensive to serve than those who have switched (if their CTS is correlated with the likelihood of having switched).

For the reasons above, it is likely that suppliers’ 2019 CTS per traditional customer was higher than the costs they have or will avoid with each customer they switch.

Rather than using Ofgem’s “CTS benefit” approach, the theoretically correct approach would be to ask suppliers what their “avoided CTS” is on each customer that switches from a traditional meter to a smart meter. Alternatively, Ofgem could collect multiple years’ of data to estimate how CTS *changes* as rollout increases, rather than its absolute level at a fixed point in time. This would separate out the bias introduced by overhead costs which increase on a per unit basis as the customer base shrinks.

Ofgem collected data from 2019 and 2020, so it would be possible to estimate the avoided CTS per switched customer if 2020 were a typical year. Of course 2020 CTS is highly unlikely to be representative of a typical year due to the COVID-19 pandemic, so the avoided CTS approach is challenging from the existing data, and it may not be proportionate at this stage for Ofgem to seek out suppliers' CTS data from 2017 and 2018.

Instead, the CTS benefit methodology should be designed to minimise the known bias in an objective manner. As we describe in the following two subsections, Ofgem's approach amplifies rather than minimises biases.

### 3.3.2. Ofgem's averaging approach places excessive weight on traditional customers with smart meter specialists

In taking the difference in each supplier's average cost to serve each customer type, Ofgem places excessive importance on small customer groups which are unlikely to be representative of the industry. In short, the incorrect order of Ofgem's arithmetic causes a material upward bias in the CTS benefit.

We demonstrate this effect with an illustrative example below:

- Assume that a supplier incurs £10 in overheads to serve any number of traditional PPM customers, plus £10 per customer. The supplier alternatively incurs £5 in overheads to serve any number of smart PPM customers, plus £5 per customer.
- Assume there are two suppliers, A and B. Supplier A is a smart specialist, serving 1 traditional customer at a cost of £20 in total, and 9 smart customers at a cost of £50 in total.<sup>48</sup> Supplier B is a balanced supplier, serving 5 traditional customers at a cost of £60 in total, and 5 smart customers at a cost of £30 in total.<sup>49</sup>
- Across the industry, it costs suppliers £80 to serve 6 traditional customers, or £13.3 per customer. It costs suppliers £80 to serve 14 smart customers, or £5.7 per customer. By considering industry-wide totals, **we estimate a CTS benefit of £7.6.**
- Ofgem's approach uses all of the same numbers, but combines them differently and produces an incorrect conclusion:
  - It calculates that Supplier A spends £20 per traditional PPM customer (£20 divided by 1) and £5.6 per smart PPM customer (£50 divided by 9), or £14.4 more per traditional customer.
  - It calculates that Supplier B spends £12 per traditional PPM customer (£60 divided by 5) and £6 per smart PPM customer (£30 divided by 5), or £6 more per traditional customer.
  - Because both suppliers have the same number of customers in total, Ofgem takes a simple average between them, and estimates a CTS benefit of £10.2.

In other words, simply by performing the operations in a different order (but on the same underlying figures), Ofgem's approach overstates the difference in CTS by £2.6 relative to an

<sup>48</sup> Traditional: £10 (overhead) + 1 customer × £10/customer = £20. Smart: £5 (overhead) + 9 customers × £5/customer = £45

<sup>49</sup> Traditional: £10 (overhead) + 5 customer × £10/customer = £60. Smart: £5 (overhead) + 5 customers × £5/customer = £30

approach that considers the total cost incurred by the industry. Intuitively, this is because, under Ofgem's approach, Supplier A's single traditional customer is just as important to the calculation as all five of Supplier B's traditional customers together, even though that customer represents only 1/6 of the traditional customer base and 1/4 of the total cost to serve traditional customers.

In fact, both methods above are overstated relative to the true savings that a supplier would actually achieve each time it switched a customer, because both incorrectly assume that the supplier would save a proportion of the fixed costs. In this example, the true *avoided* CTS is £5 per switched customer. (In order to save more, the supplier would have to cease supplying any traditional PPM customers, thereby avoiding the overhead for supplying traditional PPM customers – a further saving of £10 in total (not per customer).) Nonetheless, the industry-total approach is considerably closer to the correct answer because it does not magnify the high overhead costs associated with Supplier A's traditional customer.

Applying Ofgem's logic to the actual supplier data which Ofgem relies upon, Ofgem estimates CTS benefits of £15.43 (electricity) and £21.22 (gas) per switched customer, in 2019 GBP. Using the same data but estimating the average on an industry-total basis, we would find CTS benefits of £15.67 (electricity) and £16.41 (gas). Whilst the order of operations does not make a significant difference in the case of electricity, Ofgem overstates the savings achievable per switched gas customer by roughly £5. This is a substantial overstatement.

### 3.3.3. Utilita's traditional CTS is particularly unrepresentative of the potential for avoided CTS

Companies with a lower share of traditional PPM customers relative to total PPM customers tend to have a higher CTS per traditional customer. This is particularly true for Utilita, which is an outlier in terms of the degree of its rollout, and whose traditional CTS is the among the highest in the industry. As the figures show, fewer than 10 per cent of Utilita's customers in either fuel use a traditional meter.

Indeed, Ofgem chose to exclude Utilita from its estimate of the rollout profile, on the basis that it "is far ahead of all other suppliers in terms of smart PPM suppliers". Additionally, Ofgem notes that Utilita "is not included in our 2017 operating cost benchmark, so we would not be comparing its smart meter rollout costs since 2017 to its own costs in 2017. **We removed it from both the weighted average costs calculation and the modelling inputs of the weighted average profile**".<sup>50</sup>

Ofgem's reasoning with respect to excluding Utilita from the historical rollout profile is correct and should apply equally to the calculation of the CTS benefit:

- The SMNCC is intended to capture changes to the efficient Operating Cost Allowance (plus PPM Uplift) driven by the smart meter rollout. As Ofgem notes, Utilita was excluded from the calculation of the Operating Cost Allowance. Even if Utilita did spend £70-£80 in CTS per traditional customer in 2017, this is not embedded in the Operating Cost Allowance, and hence cannot be saved relative to the parameters of the DTC. If

<sup>50</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, Appendix 4, para. 1.5. Emphasis added.

Utilita had been included in the Operating Cost Allowance calculation, and it did have such high CTS in 2017, then the Operating Cost Allowance would be accordingly higher and suppliers could possibly be expected to save more.

- Ofgem itself claims that it has removed Utilita from the “weighted average costs calculation”, though it does not specify exactly which costs calculation it is referring to. In its discussion of CTS specifically, Ofgem states it “would need a clear reason to deviate” from its usual approach of using all available data, implying by omission that no such reason exists.<sup>51</sup> In so doing, Ofgem ignores its own finding regarding the consistency of cost savings with the Operating Cost Allowance.

Due to its outlier status in terms of rollout, Utilita’s CTS benefit (which is itself an invalid concept) is particularly unreflective of the avoided CTS an efficient supplier could achieve with each switched customer.

First, Ofgem estimates that Utilita’s CTS benefit is £61 per electricity customer and £64 per gas customer. The *total* Operating Cost Allowance plus PPM Uplift in 2019 was £108 for electricity and £135 for gas (for a typical customer).<sup>52</sup> In other words, Ofgem assumes that Utilita could save roughly half of its efficient operating costs simply through CTS benefits. This is clearly not achievable for an efficient supplier when CTS is only one of several drivers of suppliers’ operating costs (such as meter rental payments).

Second, Utilita’s total CTS per customer (regardless of meter type) is among the lowest in the industry in both fuels. This is due to its low CTS for its large base of smart PPM customers, whilst its expensive traditional customer base is too small to alter this conclusion (i.e. because the traditional overheads are smeared over the entire customer base).

However, if we were to apply the 2019 industry-average rollout to Utilita’s CTS for each meter type (excluding Utilita from the rollout), we find that Utilita would be among the least efficient suppliers.

For a PPM specialist with limited flexibility in cost allocation, this CTS level would not be sustainable. Utilita reported a total CTS of £24 million in 2019. According to Ofgem’s estimate of Utilita’s CTS benefit, it would have had a total CTS of £72 million at industry-average rollout profile in 2019, and even higher in earlier years.

In short, Utilita’s high traditional CTS and apparent high CTS benefit is only possible because it is a smart specialist. Its CTS benefit is not applicable to the rollout profile that Ofgem assumes.

In conclusion, we find that Ofgem’s estimate of Utilita’s CTS benefit is unreflective of what suppliers could have actually saved with each switched customer since 2017, relative to an Operating Cost Allowance which does not include Utilita’s high traditional CTS. Therefore, in order to ensure consistency with the Operating Cost Allowance and reflect movements in efficient costs, Utilita must be excluded from the calculation of the CTS benefit.

Excluding Utilita while retaining Ofgem’s incorrect order of operations lowers the CTS benefit from £15.31 to £4.32 for electricity, and from £21.22 to £10.35 for gas. While we do

<sup>51</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.42.

<sup>52</sup> As shown in Ofgem’s DTC models.

not suggest that Ofgem use these numbers (because the order of operations is incorrect), they serve to demonstrate just how sensitive Ofgem’s estimated CTS benefit is to the inclusion and overweighting of Utilita’s small, expensive traditional customer base: In each fuel, Utilita’s traditional PPM customers make up 3 per cent of the total traditional PPM customer base and drive 6-7 per cent of the total traditional PPM CTS, while receiving 20 per cent weight in the final calculation.

### 3.3.4. CTS Savings Conclusions

As we demonstrate in this section, Ofgem’s method of calculating the CTS benefit is highly sensitive to its incorrect order of operations and its inconsistent choice to include and overweight Utilita’s traditional customer base. As a result of these errors, Ofgem’s resulting CTS benefit materially overstates the avoided CTS that an efficient supplier could actually achieve on each switched customer.

To correct these errors, Ofgem should (a) treat Utilita as an outlier and remove its data from the calculations; and (b) calculate the CTS benefit on an industry-wide basis to avoid magnifying the importance of small, expensive customer groups. Neither of these would identify the *correct* value of avoided CTS, which would require intertemporal analysis by Ofgem or by suppliers, but these corrections minimise the size of the bias using data that Ofgem already has.

Taking these two corrections together, the CTS benefit should be £9.65 (electricity) and £11.99 (gas), in 2019 GBP.

As we show in Table 3.6, Ofgem’s approach overstates the SMNCC by £1.85-£3.26 per electricity customer and £2.96-£5.22 per gas customer.

**Table 3.6: SMNCC with Corrected CTS Savings**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<i>Ofgem SMNCC</i>					
Electricity	-0.93	-1.36	-1.96	-2.55	-2.55
Gas	-15.28	-17.57	-20.37	-23.18	-23.18
<i>Corrected SMNCC</i>					
Electricity	0.92	0.89	0.80	0.70	0.70
Gas	-12.32	-13.96	-15.96	-17.96	-17.96
<i>Delta</i>					
<b>Electricity</b>	<b>1.85</b>	<b>2.25</b>	<b>2.75</b>	<b>3.26</b>	<b>3.26</b>
<b>Gas</b>	<b>2.96</b>	<b>3.61</b>	<b>4.41</b>	<b>5.22</b>	<b>5.22</b>

### 3.4. Ofgem has Overestimated the Level of Smart Meter Costs Embedded in the Operating Cost Allowance

As one of the final steps in defining the SMNCC in a given year, Ofgem subtracts the net costs to industry for PPM from the assumed net costs included in the operating cost benchmark.

Ofgem assumes that the costs included in the Operating Cost Allowance are equal to the net costs in 2017 of a notional “lower quartile” supplier. To calculate this notional supplier’s net costs, Ofgem keeps most assumptions fixed, but applies a lower quartile assumption for the

unit cost of assets, installation, IHD and communications hubs capital expenditure, taken from the distribution of unit costs submitted by suppliers.

This notional supplier does not exist in reality and has no impact on the Operating Cost Allowance. The only supplier who does have an impact on the Operating Cost Allowance is the actual lower quartile firm in the benchmarking analysis.

There is no reason to believe that the lower-quartile benchmark supplier would be representative of the industry in all aspects except for its unit costs, in which it incurs lower quartile costs (not necessarily its own reported unit costs).

To correct for this properly, Ofgem would need to estimate the extent to which the 2017 Operating Cost Allowance under-remunerates companies with an industry-average rollout profile. Much like Ofgem adjusts the SMNCC for PPM suppliers to account for the credit rollout's contribution to the Operating Cost Allowance, Ofgem should then adjust the overall SMNCC for the different level of rollout assumed in the DTC.

We estimate that the actual Operating Cost Allowance embeds £9.32 (electricity) and £10.88 (gas) of smart meter rollout costs, compared to £10.90 and £12.12 estimated in the Disclosed Model.

Thus, we derive an “Efficient Supplier Adjustment” which captures the difference between the level of smart meter costs actually embedded by the efficient supplier and that assumed by Ofgem's existing approach. Based on Ofgem's uncorrected model, this would equal £1.58 (electricity) and £1.24 (gas) per customer, in 2017 GBP. The precise value will change as a result of other corrections to the model discussed throughout this chapter. This number should be used to reduce the SMNCC.

### 3.5. Conclusions on Core SMNCC

As we demonstrate throughout this chapter, the Core SMNCC calculations contain numerous clear and objective errors, and may contain many more smaller inconsistencies which we have not separately identified. We have separately quantified the effect of several errors above, which we quantify collectively below:

- In line with the Disclosed Data, we increase the asset age of traditional PPM meters from 14 (electricity) and 12 (gas) years to 15 years for both fuels. We justify this approach in Section 3.2.1.
- In line with the Disclosed Data and consistent with the corrected asset age assumptions, we increase the assumed term of PRCs from 10 years to 15 years for both fuels. We justify this approach in Section 3.2.2.
- In the absence of any clear evidence to the contrary, we assume that installation productivity does not improve relative to 2019 levels. We justify this approach in Section 3.2.3.
- In line with BEIS's current policy positions, we assume that all expiring IHDs are replaced with new IHDs. We justify this approach in Section 3.2.4.
- In line with standard arithmetic procedure and consistent with Ofgem's approach to estimating the rollout profile, we recalculate the CTS benefit on an industry-total basis excluding Utilita. We justify this approach in Section 3.3.



- To ensure consistency with the level of rollout costs embedded in the Operating Cost Allowance, we correct for the gap between Ofgem's assumed "LQ allowance" and the embedded costs of the actual LQ supplier. We justify this approach in Section 3.4.

In Table 3.7 below, we present levels of the Core SMNCC correcting for the above errors sequentially, to account for any interactions between them.

**Table 3.7: Cumulative Effect of Ofgem's Errors**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<b>A</b> <i>Ofgem SMNCC</i>					
Electricity	-0.93	-1.36	-1.96	-2.55	-2.55
Gas	-15.28	-17.57	-20.37	-23.18	-23.18
<b>B</b> <i>A + Corrected Traditional Asset Lives</i>					
Electricity	-0.69	-1.09	-1.65	-2.21	-2.21
Gas	-13.69	-15.72	-18.26	-20.80	-20.80
<b>C</b> <i>B + Corrected PRC Term</i>					
Electricity	0.47	0.21	-0.47	-1.15	-1.15
Gas	-8.95	-10.51	-13.60	-16.70	-16.70
<b>D</b> <i>C + Corrected PRC Start Value</i>					
Electricity	0.47	0.21	-0.47	-1.15	-1.15
Gas	-10.75	-12.59	-15.61	-18.64	-18.64
<b>E</b> <i>D + Corrected Installation Cost</i>					
Electricity	0.61	0.48	-0.03	-0.53	-0.53
Gas	-10.63	-12.34	-15.21	-18.08	-18.08
<b>F</b> <i>E + Corrected IHD Replacement</i>					
Electricity	0.69	0.65	0.26	-0.14	-0.14
Gas	-10.54	-12.17	-14.93	-17.69	-17.69
<b>G</b> <i>F + Corrected CTS Benefit</i>					
Electricity	2.54	2.91	3.01	3.11	3.11
Gas	-7.58	-8.56	-10.51	-12.47	-12.47
<b>H</b> <i>G + Efficient Supplier Adjustment</i>					
Electricity	4.50	4.87	5.00	5.13	5.13
Gas	-5.93	-6.90	-8.84	-10.77	-10.77
<i>Delta (H – A)</i>					
<b>Electricity</b>	<b>5.43</b>	<b>6.24</b>	<b>6.96</b>	<b>7.68</b>	<b>7.68</b>
<b>Gas</b>	<b>9.35</b>	<b>10.67</b>	<b>11.54</b>	<b>12.41</b>	<b>12.41</b>

As the table shows, we estimate that Ofgem's proposed SMNCC is overstated by at least £5.43-£7.68 per customer per year for electricity and £9.35-£12.41 per customer per year for gas. We find that the electricity SMNCC is *positive* in all periods, meaning that the smart meter rollout has increased the efficient costs of a PPM supplier relative to the level embedded in the Operating Cost Allowance and the PPM Uplift. In reality, the negative SMNCC calculated by Ofgem may be overstated by even more:

- We have adopted a conservative assumption to determining traditional asset lives. A longer asset life assumption would suggest a lower SMNCC (more positive for electricity and less negative for gas).
- While we have sought to minimise bias embedded in the CTS benefit, some probably exists still because diversified suppliers also incur overhead costs associated with their

traditional customer base. This could be corrected for, but would require a change to the model.

- There may be other errors which we have not separately quantified.

For these reasons, we conclude that the Core SMNCC as estimated does not reflect the change in costs that an efficient supplier would incur from the smart meter rollout. As a result, we find that it fails to satisfy two of our three criteria:

- *Cost reflectivity and recovery*: The SMNCC is materially overstated, meaning that the DTC that applies to PPM suppliers is beneath the efficient costs of supply. This is true with respect to the *Core SMNCC*, before the consideration of the whole-life costs of rollout and the partial unwinding of the cross-subsidy. This could force efficient suppliers to become unfinanceable, resulting in a reduction in competition and an increase in tariffs.
- *Incentives to compete*: Because the DTC would be set beneath the efficient costs of supplying a PPM customer, suppliers would not be enabled (or incentivised) to grow their PPM customer bases. This will tend to ensure that tariff offerings are very near the level of the cap (rather than beneath it, which would be loss-making), and could result in higher tariffs upon expiry of the DTC.
- *Incentives to improve efficiency*: The SMNCC sends perverse signals on a whole-life basis, where PPM suppliers are asked to forgo efficiency benefits achieved through costs incurred before the SMNCC was introduced. However, this chapter focusses on the *Core SMNCC* on a per-period basis. We find that, at this specific point in time, suppliers still have an incentive to improve their efficiency.

Accordingly, if Ofgem implements the SMNCC as proposed, it will fail to protect existing and future domestic customers who pay standard variable and default rates. Thus, the existing methodology is in breach of Ofgem's statutory obligations set out in the Default Tariff Act.

## 4. SMNCC in the Wider Context of the Price Cap Regimes

In this chapter, we look beyond the single-period calculation of the Core SMNCC to consider instead how it fits into the wider context of the price cap regimes that have applied to PPM suppliers since 2017. This chapter proceeds as follows:

- In Section 4.1, we discuss Ofgem’s approach to adjusting (or not) the SMNCC to account for previous periods’ efficient costs of the smart meter rollout, through the APA. Ofgem has been highly selective in its application of the APA, ensuring that suppliers are unable to recover the whole-life costs of the rollout programme. If an APA is to be applied, it logically should cover the whole period of the cap since 2017 when first introduced by the CMA.
- In Section 4.2, we discuss Ofgem’s approach to applying a PPM Cost Offset that unwinds the cross-subsidy between PPM and credit customers. As a standalone component of Ofgem’s methodology, Ofgem is correct to apply this adjustment. The adjustment is insufficiently applied (due to an arbitrary limitation on how it is accommodated in the SMNCC), and so ensures that suppliers are unable to recover the whole-life costs of the rollout programme.
- In Section 4.3, we discuss Ofgem’s selective decision to set a cap on the SMNCC to ensure that the SMNCC does not increase the DTC for PPM customers.
- In Section 4.4, we conclude.

### 4.1. The Advanced Payments Adjustment is Selectively Applied

As we describe in Section 2.3, Ofgem applies an APA to correct for PPM suppliers’ over-recovery of efficient costs since January 2021 (because the SMNCC was ultimately not applied when the DTC was extended to PPM customers). Given Ofgem’s recent decision to invoke the contingency for Cap Period 7, we understand that Ofgem intends to recalculate the APA to account for supposed over-recovery during Cap Period 7 as well.

As no SMNCC has ever been applied to the cap in any prior cap period, logic dictates that the APA should look back to the beginning of the cap in 2017 and be calculated accordingly.

Based on our corrections to the Core SMNCC derived in Chapter 3, alongside the PPM Cost Offset discussed in Section 4.2 below, there is no over-recovery in either fuel to adjust for. Notwithstanding this fact, Ofgem’s proposed use of the APA is selective and ignores the full life cost of the smart meter rollout.

Ofgem acknowledges that “the CMA concluded that its PPM cap undervalued smart meter industry charges”, and hence changed its methodology as a result.<sup>53</sup> The new methodology took effect in October 2019, which was set to align with the existing DTC methodology, minus the non-passthrough SMNCC component.

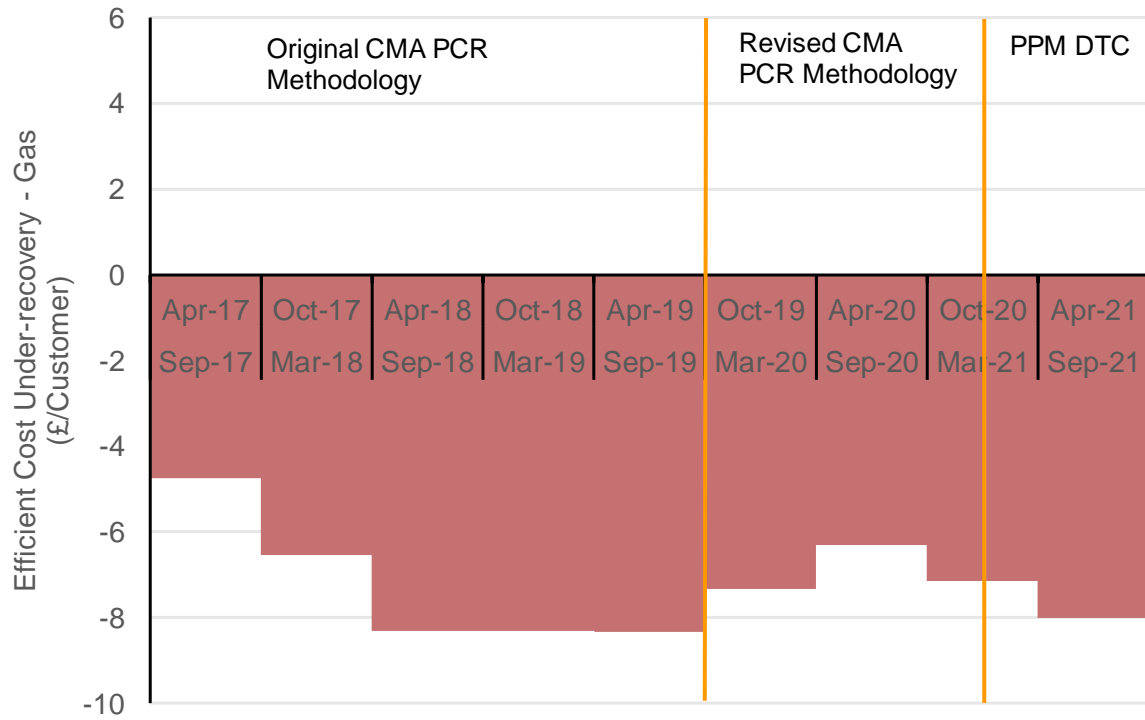
#### 4.1.1. The APA principle is applied inconsistently

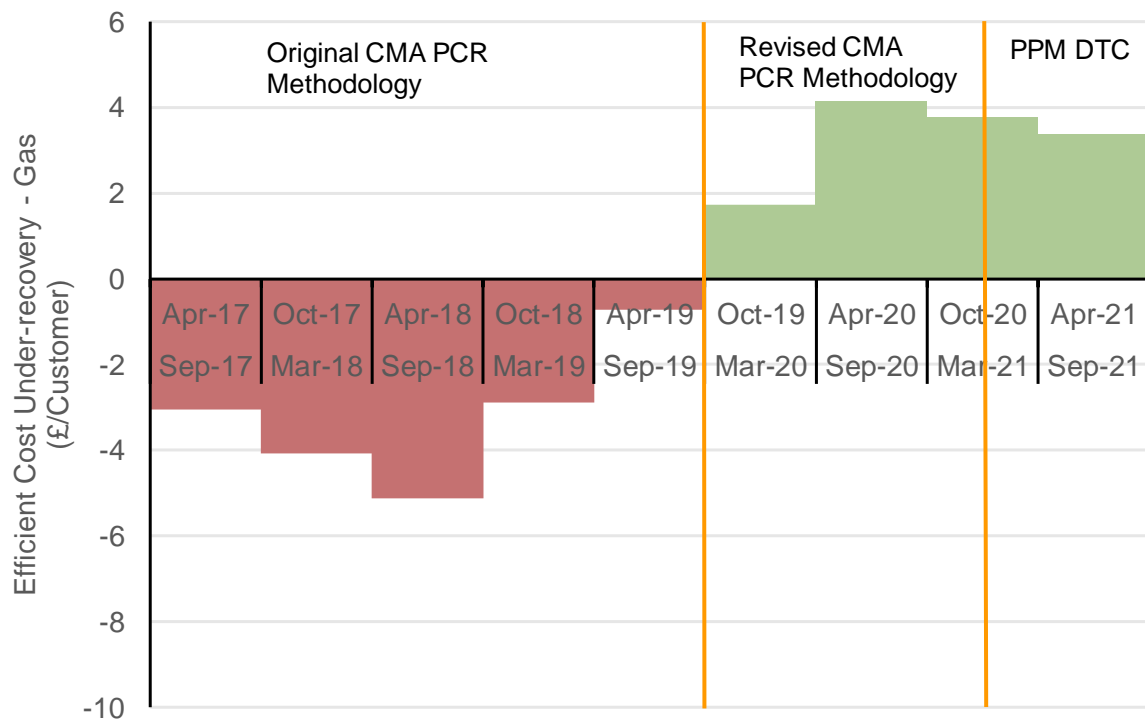
Using Ofgem’s backward-looking view of the SMNCC (uncorrected) plus the PPM Cost Offset as its view of efficient smart meter rollout costs in a given cap period (consistent with

<sup>53</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 7.19.

Ofgem’s proposal to calculate the APA after applying the PPM Cost Offset), we show the extent of the under-recovery in the three historical periods: (i) the original CMA PCR methodology; (ii) the updated CMA PCR methodology that aligns with the DTC methodology; and (iii) the PPM DTC cap currently in effect.

**Figure 4.1: Rollout Under-recovery, Ofgem SMNCC - Electricity**



**Figure 4.2: Rollout Under-recovery, Ofgem SMNCC - Gas**

Source: NERA analysis of Disclosed Model

As the figures show, Ofgem’s own view of efficient rollout costs indicates that suppliers have under-recovered in aggregate since the introduction of the PCR in 2017. Electricity suppliers under-recovered £31.55 per customer over the full period from April 2017 to September 2021 (in 2021 GBP), and under-recovered in every individual period within that. Gas suppliers under-recovered £1.08 per customer in that same period.

In essence, Ofgem seeks to claw back only the over-recovery for the small portion of the historical period where it exists, for gas customers only. In so doing, it ignores the wider context of historical under-recovery for gas customers as well as the fact that suppliers *continue* to under-recover on electricity customers. There is no logical basis for ignoring these facts.

Ofgem has chosen not to re-visit the under-recovery from the original PCR methodology period, on the basis that the CMA had already determined it was outside of the scope of the CMA’s review. Ofgem determines that it is not its “role to reopen a decision that the CMA has already considered and made”.<sup>54</sup> This determination is incorrect.

As set out in the Default Tariff Act, Ofgem has a duty to ensure financeability of suppliers, even if suppliers had previously been subject to a price cap administered by the CMA. Ofgem is now responsible for financeability of suppliers serving PPM customers, and those suppliers’ financeability is a function of a long period of time, rather than based on a single snapshot.

<sup>54</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, paras. 7.20-7.21.

For instance, suppliers may have been able to withstand the losses from the early period of rollout in the expectation that they could accrue savings in future once the smart meter stock reached scale.

Indeed, the CMA acknowledged this dynamic in deciding not to introduce a non-passthrough SMNCC in the 2019 updated methodology: “Essentially, the non-pass through smart metering costs are offset by the costs savings that can be achieved by serving prepayment customers with smart meters (in prepayment mode) rather than with a traditional prepayment meter. Consequently, we consider that our current approach will continue to incentivise the installation of smart meters on an ongoing basis, in line with the roll-out programme’s expectations and suppliers’ obligations. **For these reasons, we remain of the view that it would not be appropriate for prepayment customers to bear the non-pass through costs.**”<sup>55</sup>

In other words, the CMA considered that both the costs of rollout and the associated benefits were beyond the scope of the PCR, and Ofgem has been highly selective and inconsistent in determining only that the costs and not the benefits are outside of the scope of its price cap.

Ofgem’s current approach ensures that suppliers will not be able to recover their efficient costs of rollout. Additionally, as warned by the CMA, the threat of claw back reduces the incentives to install smart meters and drive efficiencies in the process. Both of these outcomes are to the detriment of existing and future customers subject to the cap, and hence violate Ofgem’s duties under the Default Tariff Act.

At a minimum, Ofgem should have regard for the whole-life cost of the rollout when determining whether to apply an APA that would reduce suppliers’ revenues. Clearly, it would not be possible to apply an APA at all if Ofgem had the appropriate level of regard to the historical under-recovery across both fuels.

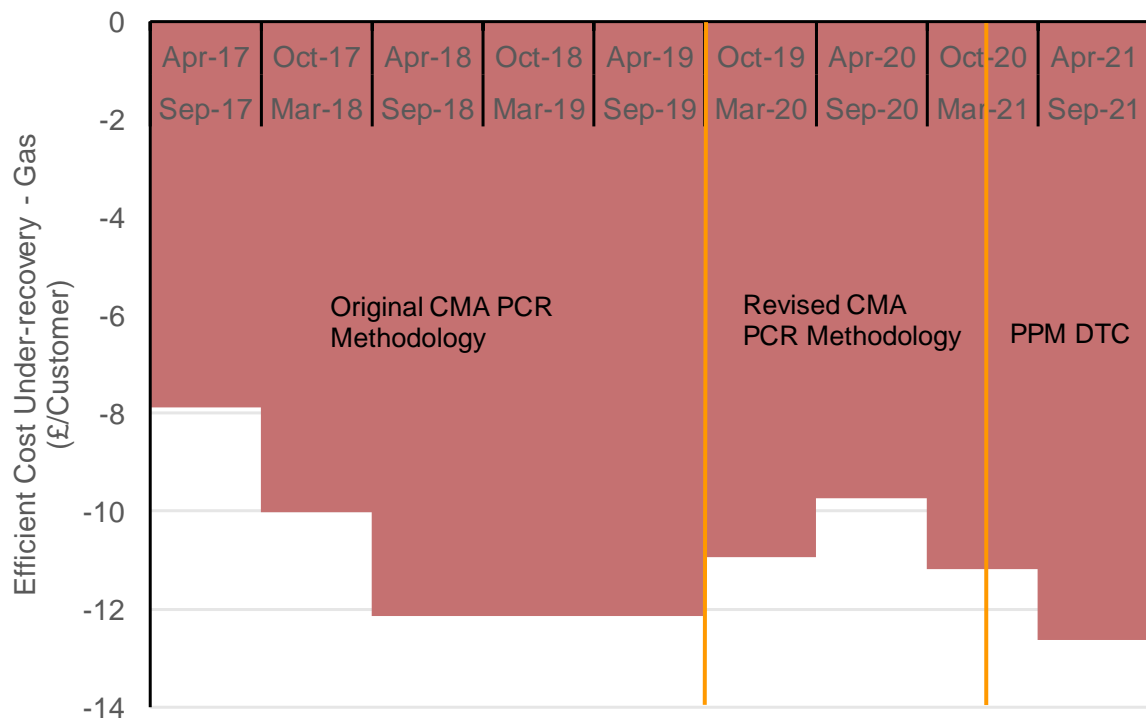
Further, however, the whole-life rollout cost should be considered when applying the SMNCC. Based on the historical under-recovery relative to Ofgem’s view of the SMNCC, suppliers should be allowed an *upwards* APA of £14.02 (electricity) and £0.48 (gas) per customer per year over the remaining 2.25 years of the DTC, in 2021 GBP.

#### **4.1.2. The APA must be recalculated to account for corrections to the Core SMNCC**

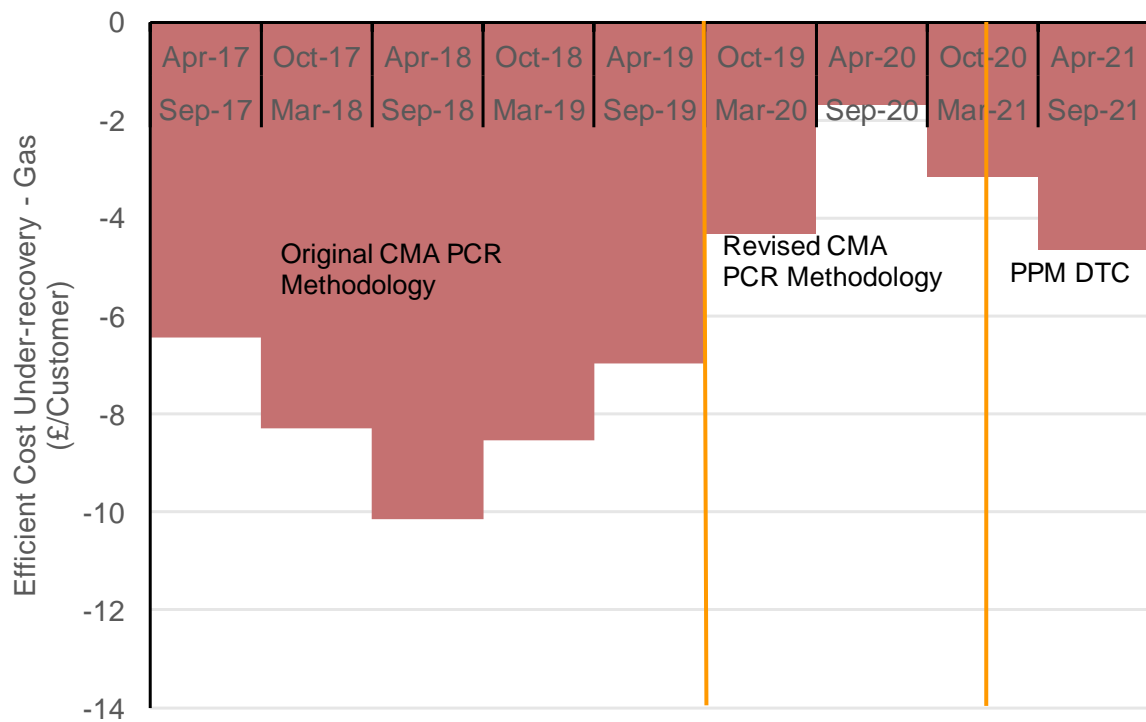
The analysis above assumes that Ofgem’s Core SMNCC is correctly determined, which we establish in Chapter 3 it is not. Using the corrected SMNCC would result in an even larger upwards APA, as shown in Figure 4.3 and Figure 4.4 below.

<sup>55</sup> CMA (31 July 2019), Review of the Energy Market Investigation (Prepayment Charge Restriction) Order 2016, para. 2.81-2.82. Emphasis added.

**Figure 4.3: Rollout Under-recovery, Corrected SMNCC - Electricity**



**Figure 4.4: Rollout Under-recovery, Corrected SMNCC - Gas**



Source: NERA analysis of Disclosed Model

As the figures show, when we remove the errors in the SMNCC identified in Chapter 3, we find that suppliers have under-recovered their efficient costs on both fuels in every period, by £49.40 (electricity) and £27.07 (gas) per customer in aggregate from April 2017, in 2021 GBP. From January to September 2021 only, suppliers under-recovered by £9.11 (electricity) and £3.11 (gas) in aggregate.

If Ofgem were to apply an internally consistent APA that covers the whole period from April 2017, it would need to apply an *upward* adjustment of £21.96 (electricity) and £12.03 (gas) per customer per year, for each of the remaining price cap periods, in 2021 GBP.

Even if Ofgem applied its selective APA that only applies from January 2021, it would still need to apply an *upward* adjustment of £4.05 (electricity) and £1.38 (gas) per customer per year, for each of the remaining price cap periods, in 2021 GBP.

## **4.2. The PPM Cost Offset is Appropriate but Should be Fully Applied**

### **4.2.1. The PPM Uplift is Understated by Approximately £17**

Ofgem acknowledges that the PPM Uplift may have been understated by up to £17 across both fuels in the CMA's original calculation of it, based on how the CMA compared the tariff and cost data that was provided by suppliers.<sup>56</sup>

Ofgem refers to this estimate as an “upper bound”, though at no point has Ofgem provided any further explanation as to why it is an upper bound and could not be larger. Instead, for the reasons we list below, Ofgem's estimate is a reasonable central estimate, and the true value could be higher as well as lower.

1. The CMA's top-down comparison (which defined the electricity PPM uplift) relied on a comparison of the lowest reported cost to serve PPM customers and the lowest reported cost to serve DD customers, amongst a sample of six or seven companies (the six large companies, plus Utility Warehouse). The CMA acknowledged that companies face subjective decisions in allocating costs (particularly indirect costs) between customer types.<sup>57</sup> There is no reason to believe that a company which allocates a large amount of indirect costs to DD customers (and hence appears to have the lowest cost to serve PPM customers) will be exactly offset by a different company which allocates a large amount of indirect costs to PPM customers (and hence appears to have the lowest cost to serve DD customers).

Indeed, cherry-picking the companies with the lowest-cost PPM customers and lowest-cost DD customers increases the probability that apparent differences in efficiency result from differing cost allocations relative to taking the average across the industry. This was an ill-advised approach to have taken.

2. In fact, because PPM customers are a minority of suppliers' customer base on average, PPM costs *per customer* are more sensitive to allocation decisions than DD costs *per customer*. To illustrate this, suppose that a supplier has £1 million in operating costs which it can either allocate to its 100,000 PPM customers or to its 250,000 DD customers. If it allocates these costs to PPM customers, then costs per PPM customer rise by £10. If

<sup>56</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.70.

<sup>57</sup> CMA (24 June 2016), Energy Market Investigation – Final Report, Appendix 9.8, para. 34.



it allocates them to DD customers, then costs per DD customer rise by only £4. As a result, companies are likely to report a wider range of costs per PPM customer than per DD customer.

The greater variance in PPM costs per customer would not be a problem when comparing averages, assuming suppliers are not consistently biased in one direction in their allocation decisions. However, the CMA's benchmarking exercise compares minima rather than averages. Greater variance in PPM costs per customer means that the minimum PPM cost per customer is likely to be further below the average than the minimum DD cost per customer is. As a result, the difference between the minima is likely to be understated.

3. The CMA's attempt to triangulate its top-down approach adds little confidence to the result. The CMA claimed to have found a "range" in potential differentials for electricity of between £22 and £26 per customer. However, the CMA's "range" is actually just two results from two nearly identical pieces of analysis, differing only in whether Utility Warehouse is included in the sample alongside the six large companies. Furthermore, even though the two variants on the top-down benchmark were nearly identical, the resulting "range" for gas was too wide for the CMA to consider the results credible. The instability of the results to small changes in the sample highlights the sensitivity of the results to allocation decisions of specific companies (namely, Utility Warehouse).
4. While the CMA's top-down methodology is unreliable, the CMA also viewed it as its preferred methodology, only using the results of its bottom-up assessment in gas when it could not trust the results of its top-down assessment. It is unclear why the CMA believed that the results of the bottom-up assessment were more reliable than the top-down assessment.
5. Because the CMA's benchmark is based on the company with the lowest cost to serve PPM customers, it may only be applicable to companies with a similar mix of legacy meters. For instance, we understand that some suppliers had carried out extensive installation of first generation (SMETS1) meters for PPM customers by the information date of the CMA's analysis.<sup>58</sup> Because traditional PPMs are more expensive than traditional credit meters, rolling out SMETS1 meters is likely to have been a more economical choice for PPM customers than for credit or debit customers, and the PPM uplift may reflect the cost savings achieved by the frontier firm for PPM customers. While this may be indicative of efficient practices in smart meter rollouts for PPM companies, it is also important that the level of smart meter penetration for this frontier company be controlled for when measuring the potential savings relative to the PPM uplift. In other words, Ofgem and the CMA can only reasonably account for the benefits of fitting smart meters once: in the choice of an alleged frontier firm, or in the reduction in costs from fitting smart meters over time. To rely on both without adjustment constitutes double-counting.

For these reasons, we find that the CMA estimates are likely to be a lower bound of the PPM uplift in 2014, and that Ofgem's estimate of the PPM uplift is preferable as a central estimate over the CMA estimate rather than as an "upper bound". To consider further we would require further information from Ofgem that has not been supplied, particularly with respect

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<sup>58</sup> CMA (24 June 2016), Energy Market Investigation – Final Report, Appendix 9.8, para. 153.

to the costs and tariffs offered by the companies which determine the benchmark in Ofgem's analysis.

#### **4.2.2. Ofgem includes a PPM Cost Offset to account for the understatement of the PPM Uplift**

To correct for the underestimate of the PPM Uplift, Ofgem proposes to include a PPM Cost Offset, such that no SMNCC will apply until the full value of the understatement is recovered.

We agree with the principle of applying the PPM Cost Offset. As we set out in detail above, Ofgem's estimate of the size of the understatement is reasonable and not an "upper bound" as Ofgem characterises it. Given that the understatement exists, it is reasonable to allow suppliers to "unwind" it through an adjustment in the SMNCC.

#### **4.2.3. Ofgem is incorrect to include the PPM Cost Offset only on a per-period basis**

Ofgem proposes to apply the PPM Cost Offset on a per period basis rather than a cumulative basis, on the grounds that its estimate of the understatement is an upper bound and hence "there is a risk that any offset could be too generous to suppliers".<sup>59</sup> Ofgem chooses "to err on the side of a slightly greater risk of under-compensating suppliers because of the overriding need to protect consumers".<sup>60</sup>

Ofgem's reasoning is incorrect in this case.

To our knowledge, Ofgem has never presented any evidence or explanation as to why its estimated understatement is an upper bound, though it has asserted so on several occasions. As we show above, Ofgem's estimate is a reasonable central estimate, and the true value could equally be higher as well as lower.

Therefore, while there may be risk that the offset is too generous to suppliers (if fully applied), this is no larger than the risk that it is too low and does not allow suppliers to recover their efficient costs.

Ofgem claims to consider the balance "between protecting consumers and having regard to suppliers' efficient costs", choosing to err on the side of the former, but this is a false dichotomy.<sup>61</sup> Consumers, particularly future consumers, are not protected when a price cap is set beneath suppliers' efficient costs, as this tends to reduce competition. It is for precisely this reason that regulators are typically required to have regard for the efficient costs of suppliers in price cap regimes. Ofgem will better protect consumers by ensuring the PPM DTC is set at a level consistent with suppliers' efficient costs.

Moreover, the balance of this risk must be considered in the wider context of the price cap regimes. Ofgem knows that suppliers were unable to recover their efficient costs under the original CMA PCR methodology, though it has decided it is beyond its remit to correct for it.

<sup>59</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.79

<sup>60</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.80.

<sup>61</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.80.

Even if one accepts that argument, Ofgem still should consider the historical under-recovery when considering the supposed risk of over-remunerating suppliers.

Ofgem states that this methodological decision makes little difference in practice based on values of the Core SMNCC Ofgem proposes. This ceases to be the case when we correct the primary errors in the Core SMNCC, as set out in Chapter 3. In Cap Periods 7, 8 and 9, the full value of PPM Cost Offset for gas would not be applied, because the Core SMNCC is smaller than the PPM Cost Offset.

If one accepts that the Final SMNCC can never be positive (which we do not), at a minimum the PPM Cost Offset should be applied cumulatively such that suppliers are closer to cost recovery.

#### 4.3. Ofgem has No Reason to Cap the SMNCC at £0 per Fuel

Ofgem imposes a £0 cap on the SMNCC in each fuel, in order to “maintain the cost differential between cap levels for PPM and DD customers”.<sup>62</sup> This is an arbitrary objective that does not relate to any of Ofgem’s obligations set out in the Default Tariff Act, nor does it override any of those obligations.

Instead, Ofgem’s overriding obligation set out in the Default Tariff Act is to protect existing and future default customers. This is best achieved by ensuring that efficient suppliers can recover their costs, rather than imposing an additional and arbitrary constraint on tariffs.

Ofgem allows for final tariffs to change (and increase) as a result of other components of DTC – if network costs or wholesale energy costs rise, suppliers are able to pass these through to consumers. The cost of smart meter rollout is no different. If the result of these mandatory activities is an increase in suppliers’ costs, then this should equally be passed through to customers.

In fact, this is how Ofgem sets the non-passthrough SMNCC for credit and debit customers, shown in Table 4.1 below. Because the net costs of the rollout are positive, Ofgem rightly allows suppliers to recover those costs. By failing to apply the same principle to PPM suppliers, Ofgem unduly discriminates against PPM suppliers.

**Table 4.1: The Credit SMNCC is Positive in All Periods**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
Electricity	10.26	9.78	9.89	10.00	10.00
Gas	3.33	1.99	1.65	1.32	1.32

*Source: Ofgem Credit SMNCC Consultation, Table A1.1*

Although the principle is arbitrary and unfounded in Ofgem’s statutory obligations, Ofgem has also incorrectly implemented its desire to ensure that the price differential between debit and PPM customers does not increase. To actually apply that principle correctly, Ofgem would need to cap the PPM SMNCC not at £0 but at the level of the *credit* SMNCC (as shown above). Otherwise, because the credit SMNCC is positive, Ofgem artificially forces the gap to widen without regard to changes in efficient costs.

<sup>62</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 7.21

#### 4.4. Conclusions

In the wider context of the price cap regimes, Ofgem's proposal is placed between two principles:

- The CMA considered that both the costs and benefits of the smart meter rollout are outside of the remit of its price cap, and instead represented normal regulatory risk. The CMA did not allow for suppliers to directly recover the costs of the early period of the smart meter rollout, but explicitly did not seek to expropriate the associated benefits, increasing the likelihood of whole-life recovery and incentivising efficiency and competition beneath the level of the cap going forward.
- Ofgem's proposed DTC design seeks to ensure contemporaneous cost-reflectivity (i.e. within each period), but only in the periods where the benefits of the smart meter rollout (possibly) exceed the costs. This approach could be internally consistent, but only if it had been applied over the whole life of the rollout and the full scope of costs and benefits associated with it.

In the wider context of PPM price cap regimes, Ofgem's proposal fails against all three of our criteria:

- *Cost reflectivity and recovery*: The proposal does not reflect the efficient costs of the smart meter rollout and does not allow an efficient supplier to recover their costs. As a result, an efficient supplier may not be able to finance its activities.
- *Incentives to compete*: Because of Ofgem's selective decision to not fully apply the PPM Cost Offset in all periods, the Final SMNCC and resulting DTC is below the efficient costs of a supplier on a contemporaneous basis. Thus, each new customer is loss-making, limiting the incentives suppliers have (and their ability) to grow their customer base.
- *Incentives to improve efficiency*: By expecting suppliers to bear the costs of rollout but not reap any of the benefits, Ofgem presents a one-way bet to suppliers. Any additional investment suppliers carry out that could yield future efficiency benefits will not be an attractive investment because they will not see the benefits.

## 5. Conclusion and Recommendations

In conclusion, we find that the methodology underpinning the Core SMNCC contains material errors and logical inconsistencies. We demonstrate that, through implementing corrections to several of these errors, the electricity SMNCC should actually be *positive*, between *plus* £4.50 and £5.13 per customer per year, while the gas SMNCC should be substantially less negative, between *minus* £5.93 and £10.77 per customer per year. These figures are *before* the application of the PPM Offset.

Ofgem has been selective and arbitrary in its proposals to (a) apply an APA only since January 2021 while ignoring large smart metering cost under-recoveries under the CMA PCR; (b) apply the PPM Cost Offset on a per cap period rather than cumulative basis; and (c) cap the PPM SMNCC (but not the credit SMNCC) at £0. These proposals ensure that PPM suppliers will be unable to recover their whole-life costs of the smart meter rollout (or even their contemporaneous costs), making it more challenging to finance their businesses and effectively compete.

In light of these findings, we consider the overall proposed methodology against our assessment criteria:

- *Cost reflectivity and recovery:* The SMNCC is materially overstated, meaning that the DTC that applies to PPM suppliers is beneath the efficient costs of supply. This could force efficient suppliers to become unfinanceable, resulting in a reduction in competition and an increase in tariffs.
- *Incentives to compete:* Because the DTC would be set beneath the efficient costs of supplying a PPM customer, suppliers would not have an incentive (or would not be enabled) to grow their PPM customer bases. This will tend to ensure that tariff offerings are very near the level of the cap (rather than beneath it, which would be loss-making), and could result in higher tariffs upon expiry of the DTC.
- *Incentives to improve efficiency:* The SMNCC sends perverse signals on a whole-life basis, where PPM suppliers are asked to forgo efficiency benefits achieved through costs incurred before the SMNCC was introduced. Any benefits or efficiencies achieved today are the direct result of the investments made historically. By expropriating these benefits, Ofgem dampens incentives for further investments.

Accordingly, if Ofgem implements the SMNCC as proposed, it will fail to protect existing and future domestic customers who pay standard variable and default rates. Thus, the existing methodology is in breach of Ofgem's statutory obligations set out in the Default Tariff Act.

In order to implement an SMNCC which is consistent with its statutory obligations, Ofgem must implement the following changes, at a minimum:

1. Correct for the errors we have identified in the Core SMNCC, so that it is at least cost reflective on a contemporaneous basis. The corrections we have proposed are clear, objective and derived in most cases directly from the Disclosed Data. By contrast, Ofgem's methods are often arbitrary, subjective and directly contradicted by the Disclosed Data.

2. Apply the PPM Cost Offset fully in all periods. We have provided a detailed explanation as to why the PPM Cost Offset is not an “upper bound” of the possible understatement of the PPM Uplift, but rather a reasonable central estimate of it. Ofgem asserts that it is an upper bound but does not provide any evidence or justification beyond its assertion. The decision as to whether to apply it on a per period or cumulative basis is moot in the absence of a £0 cap on the SMNCC.
3. Remove the £0 cap on the SMNCC. This cap is not cost-reflective and derives from a misinterpretation of an arbitrary consideration not linked to Ofgem’s statutory obligations.

Additionally, to ensure long-term financeability of PPM suppliers and whole-life cost recovery, Ofgem should apply an APA which accounts for the under-recovery from April 2017. As an alternative, we also present an APA which accounts only for under-recovery from January 2021. These values include (i) our corrections to the Core SMNCC; and (ii) the full PPM Cost Offset.

We set out these options in Table 5.1 below.

**Table 5.1: Recommended SMNCC Levels**

	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<b>Electricity</b>					
Core SMNCC	4.50	4.87	5.00	5.13	5.13
PPM Cost Offset	8.51	8.51	8.51	8.51	8.51
Apr 2017 APA	22.16	22.36	22.61	22.87	22.87
Jan 2021 APA	4.09	4.12	4.17	4.22	4.22
<b>Final SMNCC - No APA</b>	<b>13.01</b>	<b>13.38</b>	<b>13.51</b>	<b>13.64</b>	<b>13.64</b>
<b>Final SMNCC - Apr 2017 APA</b>	<b>35.16</b>	<b>35.74</b>	<b>36.12</b>	<b>36.51</b>	<b>36.51</b>
<b>Final SMNCC - Jan 2021 APA</b>	<b>17.09</b>	<b>17.51</b>	<b>17.68</b>	<b>17.85</b>	<b>17.85</b>
<b>Gas</b>					
Core SMNCC	-5.93	-6.90	-8.84	-10.77	-10.77
PPM Cost Offset	9.60	9.60	9.60	9.60	9.60
Apr 2017 APA	12.14	12.25	12.39	12.53	12.53
Jan 2021 APA	1.39	1.41	1.42	1.44	1.44
<b>Final SMNCC - No APA</b>	<b>3.67</b>	<b>2.70</b>	<b>0.76</b>	<b>-1.17</b>	<b>-1.17</b>
<b>Final SMNCC - Apr 2017 APA</b>	<b>15.81</b>	<b>14.95</b>	<b>13.15</b>	<b>11.36</b>	<b>11.36</b>
<b>Final SMNCC - Jan 2021 APA</b>	<b>5.06</b>	<b>4.10</b>	<b>2.19</b>	<b>0.27</b>	<b>0.27</b>

Source: NERA analysis

As the table shows, even if Ofgem does not take into account historical under-recovery *whatsoever*, a cost reflective SMNCC would be positive in every period for electricity, and positive in aggregate for gas. If any consideration of historical under-recovery is included (even just since January 2021), the SMNCC would be positive in every period for gas as well as electricity.

Therefore, we conclude that a *negative* SMNCC cannot be consistent with Ofgem's statutory obligations (or our assessment criteria that derive from them) when the evidence clearly and objectively points to a *positive* SMNCC.

## Appendix A. Detailed SMNCC Methodology

### A.1. Roll-out profile

The extent to which suppliers reduce their efficient PPM costs by installing smart meters depends on the rate at which suppliers roll out smart meters. A more rapid roll-out of smart meters would cause Ofgem's estimated SMNC to fall more rapidly, so that the SMNCC would become negative sooner.

Ofgem constructs an assumed PPM-specific rollout profile based on suppliers' data. Ofgem's approach to constructing the PPM-specific rollout profile has the following characteristics:

- **Three time periods:** Ofgem takes a different approach to calculate the rollout profile in each of three time periods. These are: the historical period to end 2020, the period from January-June 2021 that is covered by BEIS' "All reasonable steps" framework for the smart meter rollout, and the period from July 2021-end 2023 that will be covered by BEIS' new rollout framework.<sup>63</sup>
  - For the first period, Ofgem relies on historical supplier rollout data.
  - For the second period, Ofgem will use supplier rollout data for Q1 2021 and supplier projections for Q2 2021. Since this data was not available at the time of consultation, for modelling purposes Ofgem assumes that rollout in the first half of 2021 is equal to the average semi-annual progress between end 2017 and end 2020.
  - For the third period, Ofgem uses the minimum installation obligations set out in BEIS' consultation document for its new smart metering framework. Ofgem refers to this as a "tolerance" rollout profile.<sup>64</sup>
- **Average rollout profile:** Ofgem sets the rollout profile for PPMs based on a weighted average of rollout profiles across suppliers. This is in contrast to the "market leader" approach that Ofgem takes to set the rollout profile for credit meters. Ofgem adopts a weighted average approach for PPMs because the market leader approach risks underfunding most suppliers, as the market leader is far ahead of other suppliers in its smart meter rollout.<sup>65</sup>

**Table A.2: Ofgem's Assumed Rollout Profile of Electricity and Gas Smart PPMs (%)**

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Electricity	0.0	2.3	7.2	12.2	20.9	27.4	29.9	39.2	53.3	68.6
Gas	0.0	2.3	7.2	12.2	20.9	27.4	29.9	39.2	53.3	68.6

Source: SMNCC Model<sup>66</sup>

<sup>63</sup> As of 1 June 2021 BEIS has extended the "All reasonable steps" framework until January 2022. Ofgem will adjust its rollout profile to reflect this extension. Ofgem has proposed to assume that rollout in Q3 and Q4 2021 is the same as supplier projections for Q2 2021. See Ofgem, (1 June 2021), price cap – addendum to consultations on reviewing the credit and PPM SMNCC allowances, p. 3.

<sup>64</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 6.71.

<sup>65</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 6.53.

<sup>66</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab "RO module", lines 48:51



These installed meters may be first generation (SMETS1) or second generation (SMETS2) smart meters. Ofgem assumes the following split in each year's asset installations, for both electricity and gas meters.

**Table A.3: Ofgem's Assumed Share of Smart Meter Installs Between SMETS1 and SMETS2**

	2012-2017	2018	2019	2020	2021	2022-2023
SMETS1	100.0%	83.0%	30.4%	9.1%	4.4%	0.0%
SMETS2	0.0%	17.0%	69.6%	90.9%	95.6%	100.0%

Source: SMNCC Model<sup>67</sup>

Ofgem assumes that the total number of PPM metering points must have a PPM (either traditional or smart) in each year. We provide Ofgem's assumption for the total year-end meter stock between 2012 and 2023. Ofgem describes these numbers as being based on MPAN data, which is "roughly equivalent to mid-year, but being treated as end-year".<sup>68</sup>

**Table A.4: Total PPMs Covered by Smart Meter Mandate at Year-End (million)**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Elec	4.44	4.83	4.86	4.89	4.93	4.96	4.99	5.03	5.06	5.09	5.13	5.16
Gas	3.27	3.49	3.52	3.54	3.59	3.62	3.65	3.69	3.72	3.74	3.78	3.81

Source: SMNCC Model<sup>69</sup>

Ofgem assumes that traditional PPMs have an asset life of 14 years for electricity and 12 years for gas. Ofgem assumes that a fixed percentage of "legacy meters" (i.e. the total meter stock at the end of 2011) expire in each year, i.e. 7.1 per cent of legacy electricity PPMs and 8.3 per cent of legacy gas PPMs.

In the Counterfactual world with no smart meters (discussed further below), legacy PPMs are replaced with new traditional PPMs, which also last for either 14 or 12 years before they require replacement. Additional PPMs are also required to meet the growth in the total number of PPM sites.

In the Factual world with a smart meter roll-out, the expired meters and the new sites are fitted with smart meters, subject to:

- Site-specific limitations due to a lack of a Wide Area Network (WAN) or Home Area Network (HAN). Ofgem assumes that 0.67 per cent of meter sites lack a WAN in all periods, while the number of sites lacking a HAN drops from 30 per cent until 2017 to 0 per cent from 2020.
- Total volume of the smart meter roll-out in that year. Where the number of potential smart meter sites exceeds the roll-out volume, the balance will be met by new traditional

<sup>67</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab "RO module", lines 85:86

<sup>68</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab "RO module", cell H41

<sup>69</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab "RO module", lines 41:44

meters.<sup>70</sup> Where the smart meter roll-out volume exceeds the number of potential sites, additional legacy meters are removed early to make space for the new smart meters.<sup>71</sup>

## **A.2. Costs and benefits on each smart meter**

The SMNCC is aggregated from the following cost and benefit categories:

- In-premises costs (which includes the installation and asset costs of smart meters, the installation and asset avoided costs from fewer traditional meter replacements, and premature replacement charges);
- IT costs;
- Operation and Maintenance (O&M) costs;
- Other costs; and
- Operational benefits

### **A.2.1. In-premises costs**

In-premises cost savings comprise the net asset and installation costs of installing smart meters instead of traditional PPMs.

In practice, suppliers install meters (traditional or smart) that are owned by Meter Asset Providers (MAPs), and then suppliers make rental payments to MAPs over the course of the life of the assets. Effectively, therefore, the upfront costs of the asset and the installation are converted into annual payments. The SMNCC captures this dynamic by estimating the asset cost and installation cost of each type of meter, then converting into an annuity payment based on an assumed asset life and Weighted Average Cost of Capital (WACC). In order to capture differences between its calculated annuity value and meter rental charges actually observed (and submitted by suppliers), Ofgem then applies a “meter rental uplift”.

We summarise these parameters and resulting rental payment for each type of meter in Table A.5. Asset, installation and rental uplift costs are taken from a weighted average of supplier data.

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<sup>70</sup> Under the rollout profile in the absence of COVID-19, the last year in which new traditional meters are required due to limits on smart meter rollout is 2017. In 2020, due to COVID-19 fewer smart meters are installed and so further new traditional meters are required. Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “RO module”, lines 386:389

<sup>71</sup> This begins to happen for PPMs from 2016. Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “RO module”, lines 393:396.

**Table A.5: Ofgem Assumptions on In-Premises Cost Components (2011 £)**

	Electricity			Gas		
	Trad PPM	SMETS1	SMETS2	Trad PPM	SMETS1	SMETS2
Up-front asset cost	£41-44	£43-27	£36-35	£91-98	£63-32	£45-47
Up-front installation cost	£57	£87-116	£87-116	£60	£87-116	£87-116
Asset life	14	15	15	12	15	15
WACC (pre-tax)	7.40%	7.40%	7.40%	7.40%	7.40%	7.40%
Meter rental uplift	0%	35%	0%	56%	31%	0%
Annual rental payment	£15-14	£19-21	£17-21	£36-34	£27-20	£23-30

Source: NERA analysis of SMNCC model and data

Note: ranges are over time, i.e. from 2012-2023 (except SMETS2 which is 2017-2023)

In identifying the change in in-premises costs resulting from the smart meter roll-out, Ofgem compares the difference between the costs in a Factual scenario (or “Policy Scenario”, as Ofgem names it) and Counterfactual scenario.

In both scenarios, Ofgem assumes that the same total number of PPM metering points must exist in each year. Additionally, it assumes the same number of legacy meters at the beginning of the period, as shown in Table A.5 above.

The scenarios differ as follows:

- In the Counterfactual case, expired legacy meter sites and new meter sites are fitted with traditional meters. For each of these sites, suppliers are assumed to pay that year’s annual rental payment for the full life of the asset.
- In the Factual case, expired legacy meter sites and new meter sites are fitted with a smart meter where possible and with a traditional meter where not possible. As with the Counterfactual case, suppliers are assumed to pay that year’s annual rental payment for the full life of each asset installed (which itself varies by meter type).

In a given year, therefore, suppliers pay the sum of rental charges on all traditional PPMs added in the past 14 years if electric and 12 years if gas (in both cases), and all smart meters added in the past 15 years (in the Factual case).

Additionally, in the Factual case only, suppliers may have to replace meters before their assumed expiry because:

- The roll-out volume exceeds the sites available for new smart meters, so an additional legacy meter must be removed prematurely to make room for the new smart meter; or
- A SMETS1 has lost its smart functionality due to a supplier change, and must be replaced with a new smart meter.

When this occurs, suppliers incur a Premature Replacement Charge (PRC), equal to the sum of the up-front asset cost and installation cost, multiplied by the meter rental uplift, pro-rated by the remaining life before expiry. For example, if a traditional electricity meter’s asset cost is £40, its installation cost is £60, it has no meter rental uplift, and it is removed after 7 years (i.e. 50 per cent of its asset life remaining), the PRC would be  $50\% \times (40 + 60) = £50$ .

Having paid the PRC, suppliers would no longer have to pay meter rental charges on the expired asset. Mechanically, however, the model includes a negative rental payment to offset the assumption above that suppliers pay rental charges on all assets added in the previous 10-14 years. This is the avoided cost of meter rental payments.<sup>72</sup>

The in-premises cost separately includes the additional costs of an in-home display (IHD), which does not vary by fuel type.

### **A.2.2. O&M costs**

This cost item refers to the actual O&M carried out on a meter, rather than the operational benefits afforded by smart meters.

Apparently based on data from RFI3 Q19, Ofgem estimates that O&M on an electricity smart meter (SMETS1 or SMETS2) is £1.63 *higher* per year than on a traditional electricity PPM, and that O&M on gas smart meter is £1.88 *lower* than on a traditional gas PPM.<sup>73</sup> Ofgem has not provided the underlying RFI3 Q19 data.

Ofgem multiplies these differentials by the volume of smart meters added up to the year in question, using the logic that all smart meters exist in place of traditional meter.

### **A.2.3. IT costs**

Ofgem expects suppliers to incur additional IT costs relating to the smart meter rollout. Ofgem collects historical supplier data on IT costs to 2018 and uses forecasts thereafter as follows:

- For capital expenditure (on hardware and software), Ofgem assumes that costs decline by 33 per cent per annum in nominal terms after 2018.
- For operating expenditure, Ofgem uses company forecasts.
- Ofgem adds 10 per cent to correct for optimism bias from 2019 onwards (capex) and 2020 onwards (opex).<sup>74</sup>

### **A.2.4. Organisational, marketing, and other costs**

Finally, Ofgem includes other costs, comprising organisational, advertising and marketing costs, as measured by suppliers' data. It treats organisational and marketing costs as overheads related to the overall smart meter rollout and does not distinguish between payment type.<sup>75</sup> These cost items are individually and collectively a small component of the SMNCC, and Ofgem assumes that most of these cost items stay fixed year-on-year.

<sup>72</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Ofgem >> PPM elec PRC module” and “Ofgem >> PPM gas PRC module”, tables 6-8.

<sup>73</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Inputs – costs (live)”, lines 78:79

<sup>74</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Industry & supplier IT costs”

<sup>75</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 3.64 p. 31

### A.2.5. Operational benefits

Ofgem assesses that there are operational benefits, or reductions in the efficient cost to serve customers, following the rollout of smart meters. Ofgem assumes that “the benefits of reduced customer calls, customer switching benefits, changing tariffs remotely, and reduced costs of a change of supplier meter reading” are all captured in the PPM specific cost to serve benefit.<sup>76</sup>

Ofgem estimates the operational benefits of serving smart PPM customers rather than traditional PPM customers. Ofgem estimates these benefits based on data from a February 2021 RFI.<sup>77</sup> Ofgem calculates the cost to serve benefit separately for electricity and gas customers. It assumes that both SMETS1 and SMETS2 smart meters result in the same cost to serve benefit for customers.

Ofgem calculates the cost to serve benefit of moving from traditional to smart PPMs as follows:

- It calculates the difference between the cost to serve a customer with a traditional PPM and the cost to serve a customer with a smart PPM for each supplier;
- It takes a weighted average of all these differences across suppliers, weighted by the number of smart PPM customers served by each supplier. This results in an estimated saving per customer of £15.43 for electricity and £21.22 for gas (2019 GBP);<sup>78</sup>
- It applies the unit cost saving to the total number of smart PPMs; and
- It applies a 12 per cent cost reduction, to align the efficiency level of the CTS benefit with the efficiency level of smart metering costs.<sup>79</sup>

### A.2.6. Smart meter net costs by year

We provide data on each of the above-described cost and benefit line items for each year of the cap period in Table A.6.

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<sup>76</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.47 p. 47

<sup>77</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Inputs – benefits (live)”, lines 115:116

<sup>78</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.51, p. 48

<sup>79</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.46, p. 47

**Table A.6: Summary of Costs and Benefits (2017 £/customer)**

	2017	2018	2019	2020	2021	2022	2023
<b>Electricity</b>							
In-premises costs	2.63	5.05	4.89	3.45	6.27	8.84	10.67
O&M costs	0.89	1.30	1.54	1.38	1.41	1.15	1.36
IT costs	4.27	4.65	5.23	4.85	4.36	3.70	2.95
Organisational costs	0.39	0.39	0.38	0.38	0.36	0.35	0.35
Advertising costs	0.60	0.42	0.42	0.42	0.41	0.41	0.41
Other costs	0.53	0.80	0.96	0.87	0.88	0.93	0.90
Direct operational Benefits	-1.20	-1.97	-2.77	-3.15	-3.84	-5.75	-8.04
<b>Net cost to industry</b>	<b>8.12</b>	<b>10.65</b>	<b>10.65</b>	<b>8.21</b>	<b>9.87</b>	<b>9.64</b>	<b>8.60</b>
<b>Gas</b>							
In-premises costs	2.12	3.81	0.03	-4.04	-1.43	-0.55	-0.87
O&M costs	0.41	0.48	0.45	0.19	-0.17	-1.01	-1.44
IT costs	4.27	4.65	5.23	4.85	4.36	3.70	2.95
Organisational costs	0.39	0.39	0.38	0.38	0.36	0.35	0.35
Advertising costs	0.60	0.42	0.42	0.42	0.41	0.41	0.41
Other costs	0.53	0.79	0.95	0.87	0.88	0.92	0.89
Direct operational Benefits	-1.64	-2.70	-3.79	-4.30	-5.25	-7.89	-11.05
<b>Net cost to industry</b>	<b>6.68</b>	<b>7.85</b>	<b>3.67</b>	<b>-1.63</b>	<b>-0.83</b>	<b>-4.07</b>	<b>-8.75</b>

Source: SMNCC Model<sup>80</sup>

In absolute terms (i.e. before comparing against the 2017 baseline value), the net cost of smart metering (the SMNC) remains positive for electricity but becomes negative in gas. Intuitively, this is because Ofgem assumes that a gas traditional PPM is more expensive than a gas smart meter, while it assumes the opposite for electricity (see Table A.5). Therefore, a supplier can reduce its costs of a gas customer just by installing a smart meter instead of a traditional meter, before the operational benefits are considered.

The other material line items are:

- IT costs. However, these change little from 2017, so the net effect is small in the Final SMNCC.
- Direct operational benefits. These grow as the smart meter stock grows.

### **A.3. Embedded SMNC and Core SMNCC**

Having calculated the net costs of the smart meter rollout per customer account, Ofgem converts the net costs to the Core SMNCC allowance. Ofgem does this by calculating the difference between the level of smart meter costs already embedded in the Operating Cost Allowance and the net smart metering costs in Table A.6.

<sup>80</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Ofgem >> PPM output time series”, lines 307:327

The SMNC embedded in the Operating Cost Allowance is based on the net cost of smart metering for a hypothetical supplier with lower-quartile 2017 costs and benefits. The SMNC embedded in the Operating Cost Allowance also makes no distinction between credit and PPM payment types when calculating the net cost of smart metering. Ofgem adjusts for both of these factors to derive the Core SMNCC from the net costs in Table A.6.

- **Comparison to 2017 lower-quartile costs:** To convert the costs and benefits from Table A.6 (the SMNC) into a *change* in costs relative to what was included in the operating cost benchmark (the SMNCC), Ofgem subtracts the “lower quartile” 2017 PPM net costs of smart metering.
  - The lower quartile PPM net costs is close to the value included for 2017 in Table A.6. However, it is lower because Ofgem assumes the hypothetical supplier with lower-quartile efficiency is able to achieve lower-quartile unit costs for assets, installations, IHDs and communications hubs capital expenditure.
  - Ofgem estimates that the hypothetical supplier with lower-quartile efficiency had a PPM net cost of £7.41 for electricity and £6.01 for gas in 2017 (in 2017 real terms).<sup>81</sup> These values are subtracted from the net cost to industry for each fuel type in each year, as reported in Table A.6. The resulting figure is the smart meter net cost *change*, i.e. the SMNCC, for each year.
- **Payment type adjustment:** Ofgem finds that a hypothetical supplier with lower-quartile efficiency would have a *credit* net cost of £11.64 and £13.21 for electricity and gas, respectively, while it would have a *PPM* net cost of £7.41 and £6.01 for electricity and gas respectively. The operating cost benchmarking exercise was conducted across payment types, so Ofgem assumes that a lower quartile company would have an *average* (across payment types) net cost of £10.90 and £12.12 for electricity and gas, and that this value is what is embedded in the operating cost allowance. To account for the difference between the lower quartile PPM net cost (which is used as the baseline in the step above) and what is assumed to be embedded in the operating cost allowance, Ofgem deducts the difference (£3.49 and £6.11 for electricity and gas, or £9.60 on a dual fuel basis) from the SMNCC in future years.<sup>82</sup>

<sup>81</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Ofgem >> PPM SMNCC”, G28:G29

<sup>82</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 3.45, p. 27

**Table A.7: Calculation of Annual Core SMNCC**

	2018	2019	2020	2021	2022	2023
<b>Electricity</b>						
Net cost	10.65	10.65	8.21	9.87	9.64	8.60
- 2017 LQ net cost	7.41	7.41	7.41	7.41	7.41	7.41
- Payment type adjustment	3.49	3.49	3.49	3.49	3.49	3.49
Annual Core SMNCC (real 2017)	-0.25	-0.25	-2.69	-1.03	-1.26	-2.30
Inflation	102%	103%	105%	107%	109%	111%
<b>Annual Core SMNCC (nominal)</b>	<b>-0.25</b>	<b>-0.25</b>	<b>-2.82</b>	<b>-1.10</b>	<b>-1.36</b>	<b>-2.55</b>
<b>Gas</b>						
Net cost	7.85	3.67	-1.63	-0.83	-4.07	-8.75
- 2017 LQ net cost	6.01	6.01	6.01	6.01	6.01	6.01
- Payment type adjustment	6.11	6.11	6.11	6.11	6.11	6.11
Annual Core SMNCC (real 2017)	-4.27	-8.45	-13.75	-12.95	-16.19	-20.87
Inflation	102%	103%	105%	107%	109%	111%
<b>Annual Core SMNCC (nominal)</b>	<b>-4.34</b>	<b>-8.71</b>	<b>-14.41</b>	<b>-13.81</b>	<b>-17.57</b>	<b>-23.18</b>

Source: SMNCC Model<sup>83</sup>

#### A.4. Adjustments and Final SMNCC

Ofgem makes a number of further adjustments to derive the Final SMNCC from the core annual SMNCC.

First, Ofgem converts its annual Core SMNCCs into six-month cap periods, each of which aligns with half of the financial year. For April-September cap periods, it uses the Core SMNCC value from the same calendar year; for October-March cap periods, it uses the average of Core SMNCC values across the October-December calendar year and the January-March calendar year. Cap period 1 is only three months, January 2019-March 2019, as the cap was introduced at the beginning of calendar year 2019. The cap expires at the end of calendar year 2023 and so the final cap period, cap period 11, is also only three months (October 2023-December 2023).

Ofgem then applies the following additional adjustments:

1. **Sunk cost adjustment:** Ofgem includes an allowance to reflect the sunk costs of planned, but undelivered, smart meter rollout in 2020 and 2021 due to COVID-19. Ofgem sets the sunk cost adjustment for 2020 using sunk cost installation data provided by suppliers in the February 2021 RFI. Ofgem sets the sunk cost adjustment for 2021 by flatlining (in real terms) the sunk installation cost figures for 2020.<sup>84</sup>
2. **PPM Cost Offset:**<sup>85</sup> There is an additional cost to serve traditional PPM customers as compared to traditional credit customers. In the original operating cost allowance, the

<sup>83</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Ofgem >> PPM SMNCC”

<sup>84</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 3.52, p. 29

<sup>85</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.67, p. 53



CMA included an uplift to account for this additional cost, but subsequent analysis by Ofgem showed that the CMA's uplift was an underestimate of the additional cost. Ofgem calculates the difference between the CMA's uplift and Ofgem's estimate of the additional cost to be £7.95 per meter for electricity and £8.97 per meter for gas (2017 GBP).<sup>86</sup> Ofgem offsets the Core SMNCC by this amount in each cap period. That is, where the Core SMNCC is negative, Ofgem increases it by the offset amount up to a limit of £0 net SMNCC. Ofgem does not allow any remaining offset to be carried forward into subsequent periods.<sup>87</sup>

3. **Constrain net SMNCC to be negative for each fuel:** Ofgem has decided not to offset the PPM SMNCC beyond the point at which the net PPM SMNCC reaches £0.<sup>88</sup> This is to “maintain the differential” between PPM and credit customers and to retain “the level of protection PPM customers currently have”.<sup>89</sup> Ofgem does not offer further explanation of these two considerations.
4. **Advanced Payments Adjustment (APA):** Ofgem includes a true-up mechanism to recover cost savings achieved by suppliers in previous periods, that were not reflected in the allowance for that period.<sup>90</sup> Ofgem calculates the APA using the SMNCC model and accounts for periods from January 2021 onwards for PPMs. The APA therefore does not account for periods prior to January 2021, when smart metering would have imposed net costs on suppliers due to high workload requirements and limited accumulated benefits. Ofgem's only explanation for its selective exclusion of this period is that it does not consider its role to include review of a previous decision made by the CMA.<sup>91</sup> Ofgem uses the net SMNC, accounting for both the PPM offset and the £0 limit on the net SMNCC, to set the APA.<sup>92</sup> This can be seen in the estimated APA for electricity in Table A.8; the APA is always zero due to the £0 limit on the net SMNCC.

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<sup>86</sup> Ofgem, Annex 5 – Smart Metering Net Cost Change Methodology\_v1.9\_draft.xlsx, tab “2g PPM cost offset”, F7:F8

<sup>87</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.73.

<sup>88</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 4.81.

<sup>89</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 7.21.

<sup>90</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 7.2.

<sup>91</sup> Ofgem (29 April 2021), Price Cap: final consultation on updating the prepayment SMNCC allowance, para. 7.20.

<sup>92</sup> Ofgem, SMNCC model v5 – to disclose April 2021.xlsx, tab “Ofgem >> PPM Carry forward”, lines 108:109

**Table A.8: Final SMNCC (£ nominal)**

	Cap 3	Cap 4	Cap 5	Cap 6	Cap 7	Cap 8	Cap 9	Cap 10	Cap 11
<b>Electricity</b>									
Core SMNCC	-1.54	-2.82	-1.96	-1.10	-1.23	-1.36	-1.96	-2.55	-2.55
+ Sunk cost	0.30	0.60	0.60	0.60	0.30	0.00	0.00	0.00	0.00
+ Offset	8.39	8.44	8.46	8.51	8.51	8.51	8.51	8.51	8.51
- APA					0.00	0.00	0.00	0.00	0.00
<b>Final SMNCC</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Gas</b>									
Core SMNCC	-11.56	-14.41	-14.11	-13.81	-15.69	-17.57	-20.37	-23.18	-23.18
+ Sunk cost	0.41	0.81	0.81	0.82	0.41	0.00	0.00	0.00	0.00
+ Offset	9.47	9.52	9.55	9.60	9.60	9.60	9.60	9.60	9.60
- APA					1.18	1.19	1.21	1.22	1.22
<b>Final SMNCC</b>	<b>-1.69</b>	<b>-4.08</b>	<b>-3.75</b>	<b>-3.39</b>	<b>-6.86</b>	<b>-9.16</b>	<b>-11.98</b>	<b>-14.80</b>	<b>-14.80</b>

Source: SMNCC Model

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