Department for
Business, Energy
& Industrial Strategy

Smart Meter Policy Framework Post 2020:

Minimum Annual Targets and Reporting Thresholds for Energy Suppliers

Annex B: Analytical Evidence

Contents

Background

1. In our 2019 consultation on a post-2020 policy Framework[1] , we supported our proposals with a detailed analysis of the installation levels that our modelling suggested were feasible for the 13 large energy suppliers.[2] The broad structure of this analysis was as follows:

    i. As a starting point, the installation rates that the 13 large energy suppliers themselves had forecasted for 2019 and 2020 in their rollout plans (as submitted to Ofgem in 2019) were used as their baseline installation rates.

    ii. The model then took energy suppliers' average quarterly rollout plan installations for 2019 and 2020 as a baseline, and rolled these forwards into the post-2020 period, subject to adjustments to account for the following factors:

        - Eligibility – Installation volumes were scaled up in line with the opening up of smart meter eligibility.
        - Installation efficiency – As eligibility increases, installation point density was assumed to increase and thus installer efficiency (utilisation of time for installations, rather than for travelling between locations) was assumed to also increase. By contrast, as the rollout progresses further and fewer metering points remain, this efficiency was assumed to decrease and fewer installations were assumed to be possible.
        - Cohort reachability – Towards the later stages of the rollout, energy suppliers are likely to encounter more challenging premises and less willing customers. This was assumed to negatively impact productivity and installer utilisation.
        - Installer numbers – It may not be economically viable for energy suppliers to maintain their current installer field force on an ongoing basis. Instead, installer numbers were assumed to be static until 2022, before beginning to decrease and thereby reducing feasible installation rates.

    iii. Feasible rollout forecasts for each large energy supplier were produced by adding up the installations forecast for each quarter.

2. This modelling suggested that all of the 13 largest energy suppliers would be able to reach 85% coverage by the end of 2024. Indeed, the cross-industry average coverage level was expected to reach 92% by this time.

3. This analytical approach received challenge through the consultation stakeholder engagement process and particularly in the consultation responses from energy suppliers. The most detailed analytical challenge to our consultation-stage modelling was received from a model provided by Energy UK on behalf of their member organisations. They included a commentary, which scrutinised our modelling and described the results of an alternative modelling approach. The key points of challenge were as follows:

[1] Smart meter policy framework post-2020 consultation, September 2019
[2] This refers to the 13 large suppliers who submitted rollout plans to Ofgem in 2019. The energy suppliers were British Gas, Bulb, Coop, EDF, E.ON, Shell Energy (formerly First Utility), Just Energy, Npower, OVO, Scottish Power, SSE, Utilita, and Utility Warehouse

- The starting point of the smart meter rollout curve at the start of the new Framework.
- An insufficient consideration of consumer attitudes as one of the primary constraints on energy suppliers' ability to roll out smart meters. Stakeholders considered that this should therefore be one of the key drivers of the forecast.
- The irrelevance of operational challenges such as installer numbers and productivity levels. Stakeholders suggested that in practice such operational challenges were not a constraint as they tend to be matched to demand levels.
- A preference for a model based on rates, rather than installation levels. This would lead to a rollout model based on the rates at which eligible consumers are converted to smart, rather than the absolute number converted.

4. We welcome the detailed feedback from stakeholders on the initial modelling approach and recognise that this feedback provided a means to improve the modelling reliability and the development of a policy framework that works across industry. We have therefore taken these concerns on board in developing a revised model to support this consultation on tolerance levels. This revised modelling includes a wider range of evidence than was available during the first consultation, particularly around consumer attitudes. It also takes the alternative model provided by stakeholders in their responses to the consultation as the basis for the revised methodology. The revised model also considers specific adjustments to account for the impact of COVID-19 and is supported by the most recent available evidence.

5. This model was produced and is owned by BEIS.

Details of our Modelling Approach

Assumptions

6. Our latest analysis is based on the rate at which eligible consumers are converted to receive a smart meter installation. This rate is dependent on three key factors:

    i. **Consumer acceptance** – in order for the energy supplier to convert a given eligible customer, they need to be sufficiently positive (or indifferent) towards smart metering to permit an installation.
    ii. **Operational fulfilment** – once a customer is both eligible and willing, it is then up to the energy supplier to fulfil their installation promptly and effectively, so that the opportunity is not lost.
    iii. **Operational capacity** – the potential demand for installations calculated from (i) and (ii) has been calibrated in line with a current market installation capacity to support a reasonable floor from which to calculate the tolerance levels.

7. We base the range of rollout forecasts that we consider on various assessments of how these variables could be expected to evolve during the Framework period. Each is now explained in turn.

Consumer acceptance

8. Smart Energy GB's Outlook survey[3] is a large-scale survey of households carried out by Smart Energy GB every six months. Customers who do not yet have a smart meter are asked about their current attitude to getting a smart meter. Outlook is carried out online, with an off-line boost, to ensure that results are representative of all households and customer groups. The sample size is specified to ensure that estimates are robust for key variables and breakdowns.

9. There are now 12 waves of the survey, providing a timeseries of data on consumer attitudes and acceptance. We use this data as the basis for our modelling of consumer acceptance.[4] We have assumed that customer attitudes in the non-domestic sector are similar to domestic. The majority of businesses in the non-domestic sector are microbusinesses, with the main challenge being lack of awareness, rather than customer attitudes towards smart meters. Based on the available data we have on microbusinesses, we believe that using the same attitude breakdown as domestic is a valid assumption .

10. In this data, non-smart consumers are segmented into five attitude categories:

    - Seek – likely to actively seek a smart meter in the next six months.
    - Accept – would accept a smart meter if offered over the next six months.
    - Indifferent – have no clear view as to whether they will get a smart meter over the next six months.

[3] Smart Outlook is temporarily paused because of COVID-19.
[4] We have used data from both Smart Energy GB's Outlook survey and subsequent recontact surveys..

- Unlikely – unlikely to get or take up an offer of a smart meter over the next six months.
- Unaware – unaware of the smart meter rollout.

11. Awareness of smart metering is high, with no more than 5% of domestic consumers in November 2019 reporting they were unaware. Further awareness raising activities, either from individual energy suppliers' targeting processes, or campaigns led by Smart Energy GB focussed on groups with lower levels of awareness, are expected to raise this further. We do not have sufficient evidence that these consumers, once aware, would differ from the remaining non-smart population and therefore distribute them in line with the proportions within each category to determine the initial breakdown of customer attitudes.

12. Whilst awareness of smart metering is near universal amongst domestic consumers, evidence from Smart Energy GB has found that it is significantly lower in the microbusiness sector. If the unaware category is spread over the other attitude groups, a similar (although slightly more positive) attitude breakdown is observed. Smart Energy GB does not undertake surveys of microbusiness consumers as regularly as domestic, and there is no corresponding recontact survey to determine subsequent conversion[5] rates. In light of this, and for the reasons set out in the consultation document we have assumed that non-domestic customers have the same attitude distributions as domestic customers. Further details on non-domestic customer attitudes are available in paragraphs 91 to 96 of the main consultation document.

13. It is important to note that these attitudes relate to consumers' intentions over the coming six months and that these can, and do, change over this period. The Recontact survey run by Smart Energy GB estimates the proportion of domestic consumers within each of the consumer attitude categories that were successfully converted to smart during the six-month follow-up period. Recontact is sampled from the Outlook survey, comprising of respondents who said they did not own a smart meter at that time. It has been running since 2017, providing a timeseries on how consumer attitudes change over time and is designed to collect a representative sample across key customer and demographic groups, with the sample sufficient to provide robust estimates for these groups. This data reveals that, while "seekers" are substantially more likely to receive a smart installation than those in other categories, it is also possible to convert consumers from all attitude categories. For example, after six months, just under a quarter (24%) of those who said they were unlikely to take-up a smart meter had either had a smart meter installed, attempted to get one, or moved to a more neutral or positive attitude (Recontact, November 2019). Many current rejectors highlight resolvable concerns, such as ongoing technical issues or poor past experiences, as reasons for their current negative attitudes towards smart metering. Together, this information demonstrates that changes in consumer attitudes towards smart meters are taking place and can be expected to continue. For this reason, it would not be appropriate to simply assume that these attitudes are fixed throughout the Framework period. This is a significant difference to the analysis provided by Energy UK in response to the previous consultation, which assumed that customer attitudes, in aggregate, would stay the same throughout the remainder of the rollout.

14. We have only used data on consumer attitudes collected prior to COVID-19, with separate assumptions capturing the impact of COVID-19 on the distribution of consumer attitudes.

[5] Conversion refers to a successful smart meter installation

Operational fulfilment

15. Smart Energy GB's Recontact survey provides an estimate of conversion from all non-smart consumers. It therefore includes consumers who , at the time, were ineligible for smart metering (for example, due to technical reasons). These consumers would have been unable to be converted by energy suppliers, which has the impact of artificially deflating true conversion rates. To account for this, we divide the reported conversion rates by the proportion of consumers that were technically eligible at the relevant time in order to remove those ineligible consumers from the calculation. The latest conversion data available pre-COVID is from November 2019 (capturing customers first surveyed in May 2019). This data has been adjusted down slightly to ensure the projected value aligns with up- to-date actual coverage levels for the second half of 2019. This adjusted conversion rate for each consumer attitude grouping is assumed to be fixed throughout the projection.

16. Evidence from the Smart Meter Implementation Programme's benchmarking work with large energy suppliers (which is shared in anonymised form with participating energy suppliers) indicates that there are currently several areas in which energy suppliers could deliver improvements to operational fulfilment (for instance through adoption of industry best practice) in addition to improvements demonstrated by some energy suppliers to date. Such improvements would be expected to translate into increases in these conversion rates from the same volume of appointments. We have considered a small improvement in operational fulfilment spread over three half years between the second half of 2021 and the second half of 2022, based on a weighted average of information provided by energy suppliers to BEIS in bilateral meetings. However, as the installations are above the Installation Calibration Mechanism (ICM - see below) this has no impact on the projections.

17. The BEIS rollout projection assumes that the attitudes of non-smart consumers become progressively worse as those with more positive attitudes receive smart meters and are thus removed from the pool. However, evidence from Smart Energy GB's Outlook survey shows that the proportion of seekers has declined to a lesser extent than would be expected if due entirely to the conversion of seekers to smart, with no replenishment of this pool from other attitude categories. This suggests the presence of an underlying process that is boosting these numbers, with some consumers' attitudes improving over time.

18. The latest pre-COVID data from November 2019 indicates that there has been a significant shift towards the more positive attitude groups of seek and accept from indifferent and unlikely. However, we have used a prudent assumption by taking an average of this value with the three previous values (the changes observed between Nov 2017 and May 2018, between May 2018 and Nov 2018 and the change between Nov 2018 and May 2019). Additionally, we have assumed that this shift is delayed until H2 2021 as a result of COVID-19.

19. The customer acceptance and operational fulfilment data are combined, alongside the assumed changes in technical eligibility. This is effectively a projection of smart meter consumer demand across the modelling period on the basis that energy suppliers could fulfil 100% of this demand.

Operational capacity

20. A key constraint on energy suppliers' abilities to operationally deliver on their obligations is the number of installers available. No constraint on installer numbers has been assumed in the modelling, on the basis of feedback received from energy suppliers in response to our September 2019 consultation. During the peak of the COVID-19 disruption earlier in 2020, the majority of installers were placed on furlough as fewer installations were taking place. These installers have now returned to work, so installers not being an operational constraint remains a valid assumption. Indeed, several consultation responses indicated that energy suppliers themselves do not directly consider installer resource within their internal rollout forecasts, but instead perform an ex-post analysis to validate that their forecasted rollout rates are deliverable under scheduled resource constraints. Additionally, some energy suppliers have reported that the attrition rate risk of installers has been reduced due to the current wider economic position.

21. Subject to consultation, the BEIS rollout projections that support this consultation will be used to set the tolerance levels from which individual energy supplier annual installation minimum requirements will be calculated. As explained above, in line with previous consultation stakeholder feedback that the primary constraint on the rollout is consumer demand, the BEIS rollout projections use a consumer attitude-based conversion model to generate installation numbers for each half year period. This means that the model projects installations based on consumer demand and assumes that this demand can be fulfilled. The reduction in installations in 2020 (particularly in Q2) caused by the COVID-19 response, alongside noted increases in consumer smart eligibility in 2021, generates a large number of Seek/Accept consumers ready to be converted to smart during the first two years of the Framework. This arrangement of large numbers of non-smart customers in the model waiting to be converted to smart generates high volumes of projected installations. If these flowed through directly to the tolerance levels without being calibrated for market installation capacity, they would generate potentially unrealistic minimum annual targets for energy suppliers to meet.

22. To address this, we have applied a calibrating mechanism to the installation projections generated by the consumer attitude-based conversion model. This Installation Calibration Mechanism (ICM) applies only in situations where the consumer conversion model projects meter installations at a rate above levels that the market has demonstrated it can successfully complete, currently and historically. In such a scenario, the ICM – rather than the conversion model – directly sets the tolerance levels from which individual energy supplier annual installation minimum requirements will be calculated. In effect, the ICM, operates as a safety net to ensure any projections generated by expected consumer demand are supported by market operational capacity, thus avoiding unrealistic minimum targets based on a flow of unconstrained consumer demand. It is important to note that the ICM does not represent an upper limit on the operational installation capacity of the market; rather it is used in the model to ensure that the installation projections for each half year supports a realistic benchmark and sets reasonable minimum installation requirements, based on proven underlying market installation capacity. The ICM should not be viewed as a restriction on energy suppliers who can install above their minimum installation target if their operational capacity allows them to do so. In fact, we expect energy suppliers to increase their operational capacity over time, where needed, to meet consumer demand, including through improvement (and, in some cases, expansion) in energy suppliers' smart meter installation operations.

23. If the consumer conversion model projects installations below the level defined in the ICM, then the conversion model will set the tolerance levels from which individual energy supplier annual installation minimum requirements will be calculated.

24. The ICM has been set at 2.56m installations in each half year of the modelling. This number is based on current meter installation data, as follows:

    - Current SMETS2 installation rates calculated from DCC data (average October 2020 installation rate extrapolated out to 6 months assuming 124 working days and adjusting for bank holidays and Christmas / Easter periods, where installation rates are expected to be lower).
    - September 2020 Elexon[6] data is used to determine the rate of installations of SMETS1, advanced and traditional meters. This is scaled up by 1.8 to account for gas meters.

25. Based on the modelling set out in this consultation, the ICM applies throughout the two year period from H2 2021 to H1 2023, as the model projects that consumer demand is maintained above the level of the ICM, hence the ICM defines the tolerance levels.

26. The ICM number has been validated as consistent with a number of industry data points:

    - On average, energy suppliers installed 2.77m meters (smart, advanced and traditional) per half year between 2017 and 2019 based on BEIS Official Statistics and Elexon data.
    - Large domestic energy suppliers installed at a rate of 2.6m smart meters per half year in Q4 2017 based on BEIS Official Statistics data.
    - The rollout forecasts provided by large energy suppliers to BEIS, submitted at the end of October 2020 for H1 2021, estimated approximately 2.6m smart and advanced meters would be installed (not accounting for domestic and non-domestic small suppliers).

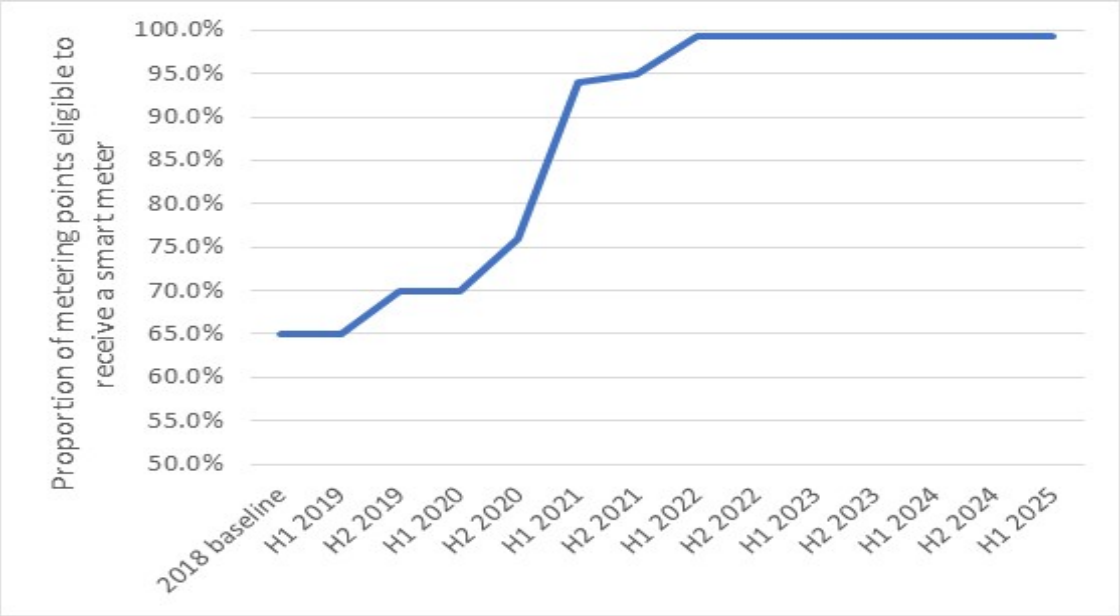
27. The resulting conversion rates, when weighted by the proportions in each attitude category, give an overall eligible-to-smart conversion rate of 12% of all eligible non-smart consumers per half-year. This includes conversions to smart from all consumer attitude categories, although as expected those who identify as more positive towards smart metering are converted at a faster rate.

Eligibility

28. As described above, the rate of smart meter installations that are feasible in each half year can be calculated by applying the conversion rates to the consumer base make-up. The relevant consumer base to consider for this purpose is the cohort of all eligible consumers who have yet to receive a smart meter. To form this base, we use the following projected eligibility curve, see Graph 2 below:

[6] September 2020 Elexon data

Graph 1: Assumed proportion of premises that are technically eligible to receive a smart meter (based on the Joint Industry Plan, which is a holistic programme plan to track progress of the delivery of key equipment, systems, and processes by industry parties involved in the delivery of smart metering)



29. This curve is based on the latest understanding within the Programme of the timings at which various technical solutions will be widely available. The majority of technical solutions are expected to be delivered by H1 2021 (94% technical eligibility) as most variant meters become available, SMETS2 prepayment is available nationwide, and 868Hz Dual Band Communication Hubs (DBCH) are starting to be deployed. Technical eligibility increases to 95% in H2 2021 as all variant meters are due to be available, along with widescale deployment of DBCH 868Hz devices. Technical eligibility rises towards 99% in H1 2022 to recognise that Alt HAN[7] starts to be delivered during H2 2021. Alt HAN is expected to increase technical eligibility up to more than 99% leaving only the No WAN exclusion. These technical solutions will lead to a significant number of previously ineligible households being able to receive smart meters. We then subtract the level of smart meter coverage at the end of the previous half year from this eligibility curve to give the total eligible non-smart base for each half year.

30. For customers with newly eligible meters (i.e. meters that are newly technically eligible to convert to smart in that half year) we have assumed that their attitudes mirror those shown in latest Smart Energy GB data in November 2019. We make this conservative assumption because these consumers may have been targeted already, despite not being eligible for smart meters. On this basis, their attitude breakdown is assumed to be similar to the rest of the market.

Starting point (projections to 1 July 2021)

31. The Framework is due to begin on 1 July 2021. It is important to understand the coverage level that is expected to be reached by the end of June 2021 to be able to

[7] Alt HAN is a programme designed to provide technical solutions in premises where the metering equipment and/or in-home display are too distant from each other to be connected by the standard communications links. This is expected to affect up to 5% of premises.

robustly project coverage levels during the Framework period. To do this, we start with the known coverage levels at the end of 2019, as reported in large energy suppliers' 2019 Progress Reports.[8] We use the values reported in these documents, including all SMETS1 meters that have either been installed after the scheduled SMETS1 end-date or have been gained during the last year through consumer churn. These are included within the figure because they will count towards the coverage figures for the purposes of the Framework.[9]

32. We have used data from BEIS Official Statistics for large energy suppliers in the first and second quarters of 2020 (Q1 and Q2 2020) as the input for H1 2020 installation numbers in the model. This suggests smart meter coverage as of end June 2020 was 39.6% for the energy suppliers included within the Ofgem rollout plans.

33. The projection for smart meter installations in H2 2020 is as follows:

    - For Q3 2020, it is based on observed SMETS2 installations from DCC data, with. SMETS1 and Advanced meter installations taken from Electralink data (uprated in line with market proportions of gas meters as this data is for electricity only).
    - For Q4 2020, it is based on installations forecast by large energy suppliers in the Ofgem rollout plans submitted in November 2020. The SMETS1 and SMETS2 portion of this data (this proportion is estimated based on Electralink data) has been uprated in line with the proportion of installations completed by small energy suppliers observed in the Electralink data (in 2020). Small energy supplier advanced meter installations are added on based on the rate installed in September 2020 from Electralink data.

34. The projection for smart meter installations in H1 2021 is based on the same methodology as above, i.e. based on forecast installations provided to Ofgem for large energy suppliers and increased for small energy suppliers.

35. This data shows that the smart meter coverage should reach 47.2% by June 2021. This data includes energy suppliers' current expectations of the implications of COVID-19. On this basis, we have not made further adjustments to account for COVID-19 and the potential effect of the additional restrictions across Great Britain, other than the impact already implicit in energy suppliers' forecasts and current levels of installations. At this stage we are observing good levels of installations supported by the mature approach industry now have in dealing with local and national restrictions. We have therefore not included an enduring adjustment to account for additional consequences on the installation projections during H2 2020 and H1 2021. However, we will continue monitoring available information and will update our model with the most up-to-date figures ahead of our Government response planned for spring 2021.

36. We have assumed that there are 55 million metering points at the end of 2019 based on BEIS Official Statistics, which is assumed to grow by 400,000 each year based on the average growth observed in Elexon data (uprated in line with market proportions of gas meters as the Elexon data is for electricity only). This is also consistent with net additional house supply per year.[10] During Year 1 (Y1) and Year 2 (Y2) of the

[8] These were submitted to Ofgem by all large energy suppliers (those with at least 250k customers) in January 2020.
[9] https://smartenergycodecompany.co.uk/latest_news/
[10] The housing supply net additional dwellings statistics, also known as "net additions", track changes in the size of the dwelling stock. See: https://www.gov.uk/government/collections/net-supply-of-housing

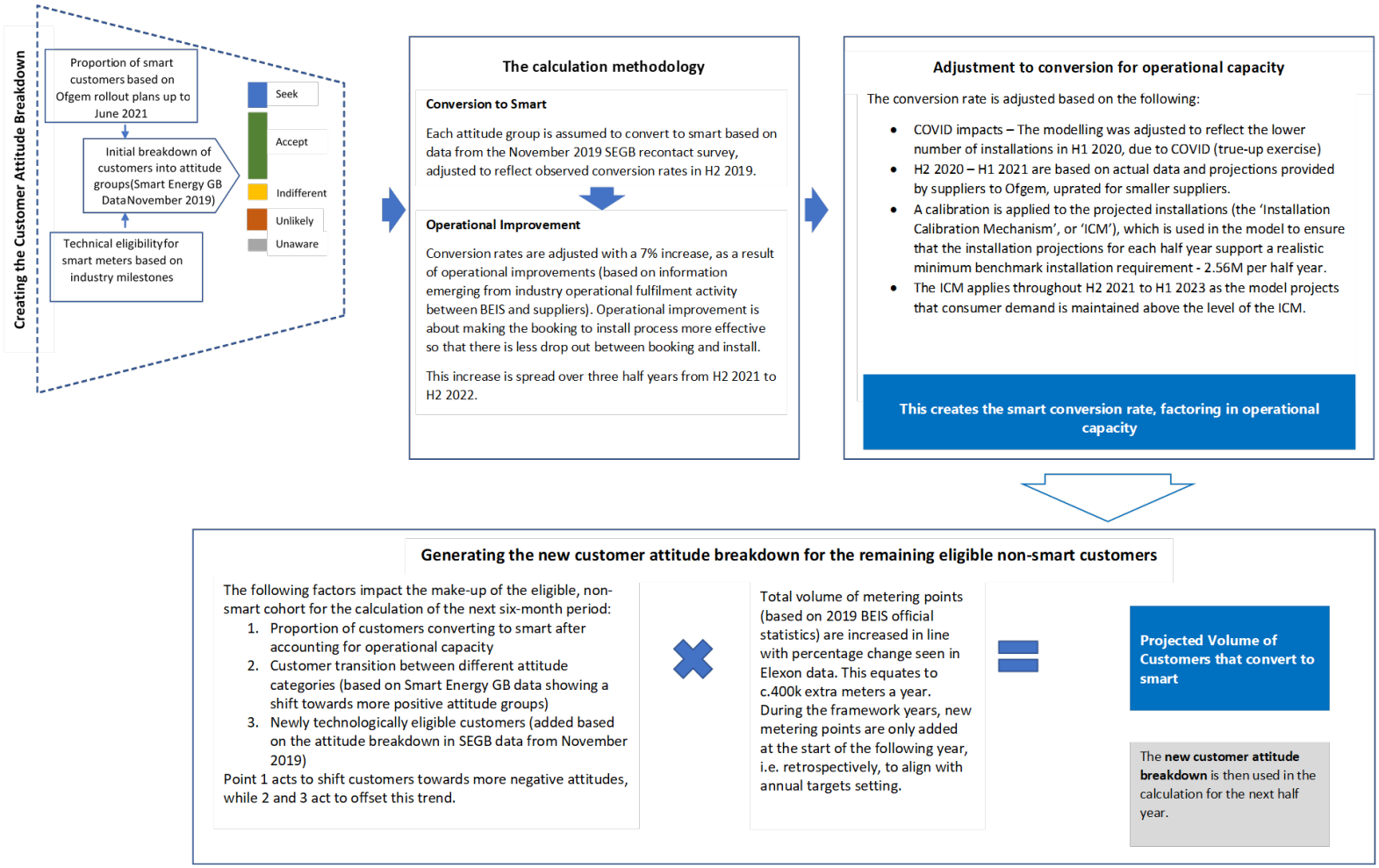
Framework, for the purpose of the model, in-year new metering points have been added to the following year of the Framework to align with the retrospective process of target setting (new metering points coming in Y1 have been added to Y2). This adjustment is necessary because energy suppliers' annual targets are set on the basis of progress (smart coverage, customer base etc) at the beginning of each Rollout year. This means that any new metering points added during Y1 will only affect the target for Y2. This reduces the smart coverage slightly (for the beginning of the following year) as the total number of metering points increases as a result of the new metering points added.

Calculation methodology (projections under the new Framework)

37. To estimate the installation rate in any given half year within the new Framework, we multiply the eligible non-smart base by the proportion of consumers in each attitude category and by the relevant conversion rates (i.e. adjusted Smart Energy GB conversion rates from November 2019, with an operational fulfilment improvement included which progressively increases between H2 2021 to H2 2022). If the resulting demand for smart meters is greater than the assumed ICM, the conversion rates are adjusted down for all attitude groups so that the groups are correctly converted in proportion to sum to the ICM volume.

38. The conversion rate accounting for the ICM (where relevant) is applied to the customer attitude breakdowns to calculate the coverage increase. We add this onto the coverage at the end of the previous half year to form a rollout projection. At the start of a new Rollout year, we then also apply the increase in metering points, which reduces the coverage slightly for the start of the next half year as explained in the previous paragraphs. Customers that have converted to smart are removed from the eligible non-smart group based on their conversion rate. This means the proportion of non-smart customers in the more positive groups reduces more quickly (as they have faster conversion rates). However, customers move between attitude groups based on the assumptions defined above, which offsets some of the reductions in the positive attitude groups. Any newly eligible consumers are added based on the attitude breakdowns in November 2019, which feeds into the attitude breakdown for the following half year. Figure 1 illustrates how the model works.

Figure 1: Diagram of the modelling approach



Tolerance Levels

39. Our proposed methodology sets tolerance levels based on the BEIS rollout projections. Under our proposal, tolerance levels are calculated as the difference between the BEIS rollout projections and the annual path to the 100% overall ambition. The levels are justified by alignment to the BEIS rollout projections, which represents the average smart meter coverage curve expected to be achieved by energy suppliers accounting for projected consumer demand and installation capacity as measured by the ICM.

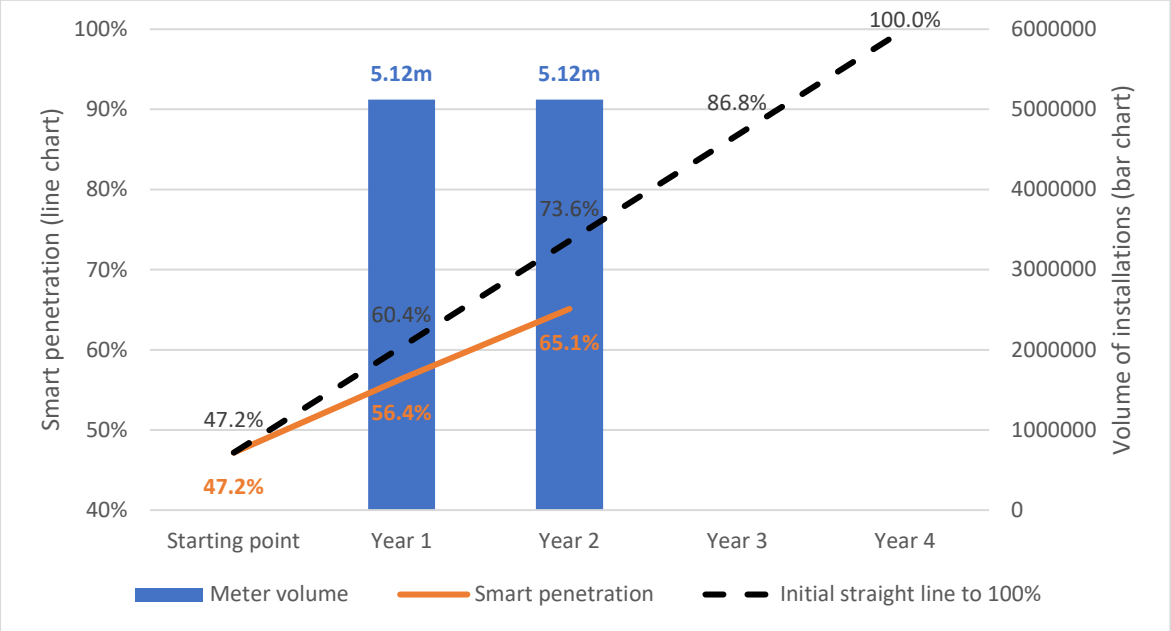
40. Tolerance is calculated in Y1 as the difference between the market-wide BEIS rollout projections and a straight line drawn from market average coverage on 30 June 2021 to market-wide rollout (100%) on 30 June 2025. In Y2, the tolerance is recalculated as the difference between the market-wide BEIS rollout projections and a straight line to 100% drawn from the market coverage reached if energy suppliers deliver the minimum requirement in Y1.

41. The BEIS rollout projections are based on reasonable assumptions to set the minimum expected installations, but we expect energy suppliers should be able to exceed this level. Some energy suppliers suggested that they would aim for the minimum number of installations required in each year, rather than meeting higher targets in line with a straight line towards 100% coverage. Therefore, to set the tolerances, the projected value is assumed to be met in the first year, with the straight line to 100% redrawn. The second year tolerance is then based on the difference between the projected value in the second year and the new line to 100%. Further detail on the tolerance options considered is included in the main consultation document.

BEIS Rollout Projections

42. Figure 2 below shows the BEIS rollout projections based on the modelling approach described above. This outcome is presented in terms of smart coverage at the end of each Rollout year (which occurs on 30 June each year) against the aspirational trajectory to 100% at the end of the Framework (30 June 2025).

Figure 2: BEIS rollout projections for smart penetration, installations, and aspirational line to 100%



Sensitivity analysis

43. A sensitivity analysis has been run to determine how sensitive the smart metering coverages are to changes in assumptions. We vary each assumption by 10% to determine its impact level. The table below presents the outcome of applying a sensitivity analysis (±10%) to key variables to understand the impact on the yearly outcome in comparison to the BEIS rollout projections. The assumptions being varied are:

- The ICM for a single half year.
- The conversion rates of the positive attitude groups (seekers and accepters).
- The proportion of customers in the positive attitude groups.
- The proportion of customers moving from negative attitude groups (indifferent and unlikely) to positive attitude groups (seekers and accepters) in each half year.

44. The overall combined results of adjusting each individual assumption (at the bottom of Table 1) represents the increase or decrease in coverage estimated for each Rollout year under the BEIS rollout projections. This analysis shows that adjusting assumptions by ±10% does not have an impact unless the ICM is adjusted. The reason for this is that the model suggests there is sufficient customer demand, but the limiting factor is the operational capacity (in the form of the ICM).

Table 1: Sensitivity analysis on BEIS rollout projections

	10% increase		10% decrease	
Assumption	**June 2022**	**June 2023**	**June 2022**	**June 2023**
i.	0.9%	1.5%	-0.9%	-1.8%
ii.	0.0%	0.0%	0.0%	0.0%
iii.	0.0%	0.0%	0.0%	0.0%
iv.	0.0%	0.0%	0.0%	0.0%
Combined	**0.9%**	**1.5%**	**-0.9%**	**-1.8%**

45. The modelling is based on data from large energy suppliers who provide data to Ofgem as part of their rollout plans. This includes information on both domestic and non-domestic customers for these energy suppliers. The rollout forecasts provided to Ofgem provides us with data up to the H1 2021 start point, which is not available for other energy suppliers.

46. As our modelling requires the use of forward projections to estimate the starting point, we necessarily rely on data from those energy suppliers that submit forecasts to Ofgem. If the modelling were instead based on the coverage for all energy suppliers then the starting point coverage in June 2021 would likely be slightly lower than the current rollout projection. This means the minimum installation level each year would have been slightly higher, although the difference would be small, as shown in Table 2 below. In terms of coverage, the starting point would only be 0.6 pp lower than our current assumption.

Table 2: Impact of using the full market average coverage

	Jun-21	Jun-22	Jun-23
Smart coverage	46.6%	55.9%	64.8%
Meter Volume		5.2m	5.2m
Original modelling smart coverage	47.2%	56.4%	65.1%
Original modelling meter volume		5.1m	5.1m
Difference in smart coverage (pp)	-0.6%	-0.5%	-0.3%

Supplier-specific Considerations

47. Whilst the above analysis focusses on the average smart coverage across the entire industry, the proposed policy Framework would be set at an energy supplier level. Each energy supplier would receive an individual installation requirement based on its own individual pathway towards the minimum requirement (defined by the market-wide tolerance levels). The Framework proposals will apply to all qualifying metering points across all energy supplier types. This means that the minimum installation requirements will apply to all energy suppliers, regardless of whether they supply domestic customers, non-domestic customers, electricity customers, gas customers, or a mixture, and regardless of their size or entry date into the retail market. The purpose of this uniformity is to avoid creating market distortions and to ensure that our Framework does not unduly favour one type of energy supplier over another.

48. In this section we consider how the modelling might vary in the specific circumstances associated with large energy suppliers, non-domestic energy suppliers, and small energy suppliers. These figures are based on the assumptions in the underlying model and so do not consider operational achievability for individual energy suppliers (the model makes some assumptions on achievability across the market, such as the ICM). However, stakeholders including energy suppliers suggested in their responses to the 2019 consultation that customer attitudes were the limiting factor and that they could match demand with supply. An analysis of operational achievability is completed later in this annex.

49. Overall, our analysis gives us confidence that the proposed tolerances are expected to result in installation requirements that are reasonable and achievable. In many instances we would hope that energy suppliers will be able to go beyond these minimum requirements.

Large energy suppliers

50. As large domestic energy suppliers are the main driver behind the overall modelling results, we do not look at this group specifically to test whether the proposed tolerances should be achievable. However, we have conducted separate analysis that shows that for the majority of the largest 14 suppliers, their installation requirements over the first two years of the Framework are less than the number of installations they have previously achieved.[11] In response to the 2019 consultation energy suppliers indicated that they could match supply with demand, this gives us confidence for the majority of the largest energy suppliers that these requirements will therefore be achievable.

51. Our analysis is understandably limited by the fact that we cannot assess the attitudes of consumers for each of the largest 14 suppliers, which will likely differ depending on a number of factors, such as the starting point, frequency of previous contacts or engagement in the energy market. However, there are two logical assumptions we can make on customer attitudes:

[11] The data underpinning this analysis is commercially confidential and therefore cannot be released as part of the consultation process.

i. Energy suppliers who have made less progress through their rollouts to date are more likely to have a higher proportion of customers with a positive attitude remaining to target so these customers could be easier to convert. Churn may impact this attitudinal mix but would also introduce a new “engaged” customer where conversion should be more likely.
ii. Consumer attitudes can be shaped by energy supplier activity to a certain extent. There is some evidence to suggest that if effective communications and messaging are deployed, substantial increases in coverage can be achieved despite significantly different annual starting points.

Small domestic suppliers

52. Published rollout statistics show that small domestic energy suppliers[12] are further behind with their rollouts, in general, than larger energy suppliers. Furthermore, they are likely to have less leverage with meter manufacturers, Meter Asset Providers, and meter installers to enable them to quickly increase their installation rates. Therefore, the minimum installation requirements might be more challenging for these energy suppliers to achieve.

53. In practice many smaller energy suppliers will likely contract installations out to third-party meter installers working across several energy suppliers, so operational improvements across the market should also be expected to benefit them. In addition, with lower starting points these energy suppliers are likely to have a higher proportion of customers in positive attitude groups who are easier to convert to smart metering. Finally, smaller energy suppliers are more likely to have a high number of engaged customers in their portfolio (given all their customers will be gained through churn - which in itself provides an opportunity to convert a customer to smart metering) which is likely to result in higher conversion rates for their customer base than for the market on average, all else being equal.

54. To assess the impact on small domestic energy suppliers, coverage data from 2018 and 2019 for small energy suppliers is aggregated and input into the forecast. Table 3 shows their rollout projections under two different scenarios; one where consumer attitudes are the same as the rest of the market and a second where we infer that consumer attitudes are better than the average.

[12] Those with fewer than 250,000 domestic gas and/or electricity customer accounts.

Table 3: Small domestic energy suppliers coverage levels under different scenarios.

Position at year-end		2018	Jun-20	Jun-21	Jun-22	Jun-23
Modelled conversion (market average attitudes)	Minimum tolerance requirement				50.4%	60.9%
	Smart	*16.4%*	*29.2%*	*39.3%*	50.0%	60.1%
Modelled conversion (inferred attitudes > average)	Minimum tolerance requirement				51.1%	61.7%
	Smart	*16.4%*	*29.4%*	*40.1%*	51.2%	61.6%

55. As the table shows, if consumer attitudes are better than the market average for small energy suppliers, this can give a small boost to coverage forecasts. Whilst these scenarios suggest that the proposed targets could be more challenging for smaller energy suppliers than for larger ones, there is sufficient evidence to believe that if these energy suppliers can increase their operational capacity then there is untapped consumer demand that should make their requirements achievable.

Non-domestic energy suppliers

56. Smart coverage in the non-domestic sector is currently slightly ahead of that in the domestic sector due to a substantial number of advanced meters which were installed prior to the Smart Metering Implementation Programme beginning mass rollout. In addition, large energy suppliers with both domestic and non-domestic portfolios have tended to focus on installing smart meters to their domestic customer base. This has been for business strategy reasons and, partly because the meter variants needed for non-domestic installations were not available as they are now. As a result, yearly installation rates have, in more recent years, been lower in the non-domestic sector than the domestic.

57. Given the increasing availability of SMETS2 meters variants current market-wide eligibility is now similar for both domestic and non-domestic. On that basis we are assuming that consumers in both markets can be treated similarly. In addition, there is little evidence of specific non-domestic consumer engagement challenges at this stage in the rollout. Evidence suggests that where microbusiness concerns exist, they are not strongly held. Therefore, we have conservatively assumed the same distribution of consumer attitudes for non-domestic as domestic, including the proportion who would reject a smart meter.

Large non-domestic energy suppliers

58. We have run the model above for large non-domestic energy suppliers, to estimate the number of installations we would expect these energy suppliers to make based on the assumed consumer attitudes described above, the results of which are shown in Table 4.

Table 4: Large non-domestic coverage levels under different assumptions

Position at half year-end		2018	Jun-20	Jun-21	Jun-22	Jun-23
Modelled conversion (market average attitudes)	Minimum tolerance requirement				56.1%	64.9%
	Smart	*29.2%*	*39.0%*	*46.8%*	56.0%	64.8%

59. This scenario shows that for large non-domestic energy suppliers it should be possible to meet the minimum installation requirements for the first two years, although each year's rollout is very close to the allowed tolerance.

Small non-domestic energy suppliers

60. Smaller non-domestic energy suppliers have completed a higher proportion of the rollout than larger non-domestic energy suppliers. This means that based on re-running the analysis conducted in Table 4 above for this group, smaller non-domestic energy suppliers are more likely to achieve the minimum requirements as shown in Table 5 below.

Table 5: Small non-domestic energy suppliers coverage levels[13].

Position at half year-end		2018	Jun-20	Jun-21	Jun-22	Jun-23
Modelled conversion (market average attitudes)	Minimum tolerance requirement				65.6%	71.6%
	Smart	*51.5%*	*55.6%*	*59.4%*	66.2%	72.8%

Operational achievability

61. The analysis in the previous section assumed that the rollout of smart meters is purely consumer demand driven without any operational limitations (except the ICM). This was based on feedback from the September 2019 consultation where respondents suggested that the limiting factor was demand rather than operational issues and that supply (installation fulfilment) would be able to match demand.

62. This section looks at the rate of installation that energy suppliers have achieved in Q1 2020 pre-COVID-19 and in 2018 and 2019 to determine if each energy supplier's minimum requirements are achievable based on their current installation rates. This uses the modelling above to determine an energy supplier's starting point and the tolerances are used to calculate an energy supplier's minimum requirements in terms of meters to be installed. The breakdown into the energy supplier categories is based on data from BEIS Official Statistics.

63. Assuming energy suppliers install their minimum requirement, the meter installations required in each year are shown below. Alongside these are volumes of installations achieved in 2018, 2019 and an extrapolated annualised figure based on Q1 2020, where available (adjusted to assume energy suppliers only installed for 11 weeks

[13] 2019 data is not included in the table to facilitate the move from year end to half end data. This has no impact on any of the analysis.

before COVID-19 restrictions were introduced). The green highlighting shows energy suppliers are required to install at a slower rate than they have achieved in 2018, 2019 or 2020. The red highlighting indicates the installation requirement is greater than the install rate in 2018, 2019 or 2020.

Table 3: Operational achievability for energy suppliers based on calculated tolerances compared to previously achieved installation levels.

	Installation requirements		Historical installation rates		
Supplier	**Year 1 Jun-22**	**Year 2 Jun-23**	**2018 Installs**	**2019 Installs**	**Adjusted annualised Q1 2020 run rate**
Large domestic supplier	4,437,770	4,341,256	4,723,237	4,264,915	4,296,807
Small domestic suppliers	395,368	388,302	194,759	128,765	
Large non-domestic suppliers	244,167	238,924	77,947	93,624	96,070
Small non-domestic suppliers	35,588	34,437	67,370	27,130	

64. For non-domestic energy suppliers, this analysis suggests they will be required to install at a rate that is more than double what they previously have achieved. However, up to this point, variant meters were not available which meant that non-domestic energy suppliers could not easily target microbusinesses which make up 70% of non-domestic customers. This means that each energy supplier will have a pool of non-domestic customers that they have not previously been able to engage on smart metering. We are also confident that these large energy suppliers have substantial experience, expertise and capabilities in domestic installations that could be applied to supporting non-domestic installations to the required levels.

65. The large domestic energy suppliers supply a large majority of the non-domestic market (c.70%). Many of these energy suppliers have focused on installing smart meters to their domestic customer base whilst the meter variants more widely needed for non-domestic consumers were developed. This has slowed down the progress of the non-domestic rollout curve. So past performance should not be taken as an indicator of what these energy suppliers can achieve under the new Framework. Further details supporting this reasoning have been included in the main consultation document.

66. For small domestic energy suppliers, the analysis also indicates they will be required to install at a faster rate than they have previously. Many smaller energy suppliers have decided to take a SMETS2 only approach which has meant that they have started their rollouts later than the larger energy suppliers. Recent evidence of their current SMETS2 installation rates from DCC data indicates that they are already increasing their installation rates towards the level required.

67. We have reviewed large energy suppliers' current installation rates and future operational capacity to determine if the installation requirements are achievable. Additionally, similar size energy suppliers have been compared to determine if those not achieving the required levels could potentially achieve their requirements in line with their competitors. This has shown that installation requirements are reasonable

and achievable, despite some energy suppliers not yet installing at the required level under the proposed Framework.

Model Disclosure

Instructions for access

68. BEIS will disclose the model to licensed gas and electricity suppliers (and organisations representing them). We consider that the model and main assumptions have been described in sufficient detail in this document for the benefit of other stakeholders.

69. The disclosed information ("Disclosed Data") will include a description of the assumptions underpinning the policy proposals and references to the data used in the model but will exclude any references to data about individual licence-holders which is commercially sensitive and which cannot be disclosed to other licence-holders.

70. Energy suppliers (or organisations representing them) wishing to access the Disclosed Data should contact BEIS by sending an email to smartmetering@beis.gov.uk including:

    i. the name and address of the licensed energy company ("the Recipient Organisation");
    ii. the name, role and contact details (email address) for the individual to be granted access to the Disclosed Data ("the Individual Recipient")- we will accept a maximum of two contacts per company; and
    iii. an email confirmation from a senior representative of the Recipient Organisation, on behalf of the Recipient Organisation and the Individual Recipient(s), of their acceptance of the disclosure arrangements set out in Annex C of the consultation document.

71. Access to the Disclosed Data will be via an email to the Individual Recipient(s) . The email will contain a link to a SharePoint workspace with the relevant information. This information is to be treated as confidential. Instructions on how to use and share this data and the conditions involved have been included in the Terms and Conditions of Disclosure attached in Annex C of the consultation document.

72. During the consultation process we will also operate a separate email address SmartMeteringModelling@beis.gov.uk where energy suppliers with access to the Disclosed Data can address any question they may have about the functionality of the model, including clarification of formulae or definitions. To the extent that any questions seek to challenge, test or dispute the validity of the assumptions and/or evidence used in the model, those aspects will not be answered at this stage as we would expect that any specific challenge to the assumptions and evidence will be included as part of the overall response to consultation.

73. We will endeavour to answer requests for access and subsequent queries within two working days if received on or before the 16th December 2020. Any emails received after that date may be subject to a longer response time.

74. Please note that any access to the Disclosed Data will be withdrawn on the 15th January 2021 at 12 midday, when this consultation closes. The analytical support availability will also end on that date.