

DCP 127 “Gas First Smart Meter Installation” Costs and Benefits Analysis

1. Introduction

For the purposes of this paper “Gas First” is interpreted as covering those scenarios where a gas supplier wants to install a gas smart meter and the customer is contracting for their electricity supply from a different energy supplier either

- in advance of the fitting of an electricity smart meter at a given premises or
- where there is an existing electricity smart meter with an incompatible communications hub.

This paper provides details on the costs and benefits of a number of alternative approaches that a gas supplier could use to facilitate “Gas First” installations, including using the Distribution, Connection and Use of System Agreement (DCUSA) as a vehicle for providing such permission.

The option to use batteries to power the gas communications hub has not been included in the cost/benefit analysis as the workgroup have concluded that battery power will not support the full functionality of smart meters. This conclusion has been reached following discussion with meter manufacturers and the EUA who have confirmed that battery power will not support full smart meter functionality.

The option to arrange a concurrent electricity and gas smart meter installation has also not been included in the financial analysis of costs and benefits as it was agreed by the working group that this is not strictly a gas first solution and would not represent a fair like for like comparison. A description of how this might work and the advantages and disadvantages have, however, been included later in this paper.

Summary of solutions considered for comparison in the cost/benefit analysis to facilitate gas first smart meter installations.

1. DCUSA changes
Amend DCUSA to provide consent to gas suppliers’ agents to de-energise, connect the gas smart meter communications hub and re-energise the incoming electricity supply.
2. Bi-lateral agreements
Gas supplier puts in place bi-lateral arrangements with each registered electricity supplier to provide consent for the gas supplier’s metering agent to act as an agent of the electricity supplier.
3. Joint electricity Meter Operator visit
Gas supplier to arrange a co-incidental visit with the appointed electricity meter operator and request that the electricity meter operator carries out de-energisation, connection of the gas smart meter communications hub and re-energisation of the incoming electricity supply.

2. Costs Benefit Summary – (For assumptions used in calculating cost and benefit data see Appendix 1)

	DCUSA Changes	Bi-lateral Agreements	Joint Electricity Meter Operator Visit
Cost	£17,175 ⁽¹⁾ per gas supplier, amortised over six years	£5,000 ⁽²⁾ per agreement =230k ⁽⁵⁾ , amortised over 6 years	£80 ⁽³⁾ per visit
MOCOPA annual fee	£2,825 ⁽⁴⁾	£2,825	n/a
Cost per gas supplier pa based on installing 64k ⁽⁶⁾ gas first smart meters	£5,687	£41,158	£5,120,000 ⁽⁷⁾
Benefits per Customer per annum	£28.86 ⁽⁸⁾	£28.86	£28.86
Total benefit pa based on installing 64k	£1,847,040 ⁽⁹⁾	£1,847,040	£1,847,040
Net benefit/loss pa per gas supplier	£1,841,353	£1,805,882	(£3,272,960)
Advantages	Single industry wide agreement which puts in place an agreement with all electricity suppliers and distributors Voluntary agreement	Voluntary agreement No need for DNO permission	No formal legal agreements required
Disadvantages	Most cost efficient Gas supplier has to accede to DCUSA Details of future DCUSA change proposals may be sent to gas supplier parties in which gas suppliers may choose to participate in	No obligation to sign agreement Agreement may be withheld Different (non standard arrangements negotiated) Multiple agreements to manage with potential differing terms	Electricity supplier agent may not provide service to gas supplier Additional cost of site visit

Full details of the costs and benefits are described in the next sections.

3. Generic benefits of being able to offer single fuel customers gas only smart metering

In April 2012 DECC updated their impact assessments for Smart meter roll-out in both the domestic and non-domestic sectors.

The impact assessments stated that “Lack of sufficiently accurate, timely information on energy use may prevent customers from taking informed decisions to reduce consumption and thereby bills and CO2 emissions. The lack of accurate, timely information increases suppliers' accounts management and switching costs. Better information on patterns of use across networks will aid in network planning and development, including future smart grids. Smart metering is a key enabling technology for managing energy systems more efficiently in the future, and providing new information and services to consumers which reduce costs and carbon emissions.”

There are approximately 4.6 million single fuel gas customers in the market who could be potentially delayed in receiving the benefits of a smart meter if the gas supplier had to wait for the installation of the electricity smart meter.

All suppliers are mandated to roll-out smart meters by 2019. If a gas only smart metering solution is not put in place gas only suppliers could find themselves dependent upon the roll-out plans of competitor electricity suppliers, which for those gas suppliers with significant numbers of gas only customers could mean they are unable to meet the 2019 target. This could also impact on the gas suppliers planning efficiencies by loss of customer density.

The DECC impact assessment contains estimates of benefits to consumers of rolling out smart meters by 2019. Around two thirds of the average domestic consumers energy bill is made up of gas costs therefore engaging gas only customers early could bring forward the benefits of smart metering earlier than would be possible should the gas supplier become dependent on installation of a smart electricity meter.

For the purposes of this paper the financial benefits of a Gas First installation have been taken from the DECC Impact Assessment published in April 2012 “Smart meter roll-out for the domestic sector” A further updated DECC Impact Assessment was issued on 24th January 2013 but none of the benefits data shown below has changed in the updated assessment. . These are as follows:

Customer Benefits

- *Energy demand reduction 2% (£16.50 per annum for average gas customer)¹*

Supplier Benefits

- *Avoided site visits £6.10 per meter per year ²*
- *Reduction in call centre costs £2.20 per meter per year ³*
- *Better debt management £2.20 ⁴*
 - *Switching savings £0.80 per meter (pre DCC used in cost/benefit)(post DCC £1.58) ⁵*
- *Theft savings £0.36 ⁶*
- *Remote disconnection £0.50*

Network benefits

- *Gas losses £0.20 ⁸*

The total savings per customer per year are £28.86

Notes:

¹ Section 3.4.1.1 page 42 (Annual Average gas consumption Electricity and gas Supply Market Indicators 19th December 2012 annual gas consumption £825)

² Table 3-6 page 44

³ Section 3.4.2.2 page 45

⁴ Section 3.4.2.4 page 46

⁵ Section 3.4.2.5 page 47

⁶ Section 3.4.2.6 page 48

⁷ Section 3.4.2.7 page 48

⁸ Section 3.4.3.1 page 48

For the purposes of the costs/benefit analysis we have assumed that 50% of customers that are supplied by different suppliers for their gas and electricity will have their electricity smart meter installed first. Therefore if **2.3m** single fuel customers have a gas smart meter installed first, these benefits would (as a maximum) total **£66.378m** (£28.86 x 2.3m) for each year that the gas smart meter is installed earlier than would otherwise be the case.

There are also potential benefits from any of the solutions described in this document, from avoiding costs of stranded assets. These have not been factored into the table above as they are difficult to quantify and will be the same for each option. Stranding would occur where a gas supplier cannot install a gas smart meter (e.g. when the existing dumb meter fails or its certification expires) so must install a dumb gas meter, which is replaced by a smart meter before it has been used for its full potential life. The Working Group agreed to use an average gas meter price to demonstrate stranding costs without revealing confidential information.

National Grid Metering publish metering charges on their website¹ and these can be used to calculate indicative standing costs that may be incurred by gas suppliers should they be required to install dumb meters in advance of the electricity smart meter being installed.

For example a credit meter removed today that was installed in 2006 would incur a charge of £85.63 for a replacement meter. As an example if a supplier could not avoid exchanging (policy and customer driven) 10,000 gas meters in 2013 and chose to install dumb meters the costs would be £856,300. Each of these meters would need to be replaced by smart meters in due course.

¹Agreement (Alternative) and General Conditions of Contract for the Provision and Maintenance of New/Replacement Metering Equipment.

4. Costs of Solutions

1. DCUSA changes.

This solution will require any gas supplier who wishes to de-energise and re-energise an incoming electricity supply to install, remove or maintain a gas smart meter communications hub to accede to the DCUSA, which in turn will require that their metering agent accedes to MOCOPA.

The accession process would involve the gas supplier incurring the following costs:

- Legal review of contracts & completion of DCUSA accession application form (there are no charges for acceding to these).

Following consultation responses on the initial drafting of the cost benefit analysis the work group agreed to increase the costs to cover accession to the MOCOPA and preparing all processes and procedures for the MOCOPA registration audit.

The following matters are not included in the cost benefit analysis as there are no unavoidable costs involved with these;

- Voluntary attendance at relevant working groups and voting on relevant changes (the intention is to add gas suppliers as a party category and to include this category on the change proposal template. By doing this gas suppliers will easily be able to review any change proposal and check whether they are likely to be impacted as a party)

The intention is not to require gas suppliers to become shareholders of DCUSA. The costs of procuring and supplying the gas first power device and communications hub have not been included in the cost/benefit as these would be required in all 3 options. In option 4 if the electricity communications hub is not compatible with the gas smart meter then the gas first power device would still be required. If both meters are compatible the gas first device could still be used to provide communications to both the electricity and gas smart meters.

Following discussions relating to whether electricity suppliers would have any terms in their metering contracts that would prevent gas suppliers or their agents from working on the electricity meter it was agreed that there would be a cost incurred by suppliers in checking their agreements for such terms. The workgroup agreed that although this activity would be required the time required to do this was not material and therefore has not been explicitly included in the analysis.

No costs have been included for the change proposal development costs of this DCUSA change, DCP127. Gas Suppliers are not liable for DCUSA development costs and therefore such costs are not considered as part of the analysis. The workgroup considered that these costs will be incurred by the industry regardless of the outcome of the proposal.

2. Bi-lateral arrangements

Gas suppliers could put bi-lateral arrangements in place with each electricity supplier to obtain consent for the gas supplier's meter operator to act as agent for the electricity supplier's meter operator. There are currently 56 companies licensed as domestic and non-domestic electricity suppliers who fall within 46 company groups. There are 44 companies licensed as domestic and non-domestic gas suppliers who fall within 33 company groups according to Ofgem's latest report. If every gas supplier elected to put a bi-lateral arrangement in place with each electricity supplier 2464 (56*44) agreements would need to be signed. However, the legal costs can be reduced where one lawyer can advise all suppliers in a company group (46*33).

The Working Group noted that contracting with the six largest suppliers would provide coverage of the majority of the market and reduce the number of contracts required (although some of those six may have more than one legal entity that requires a contractual relationship). If this option were used, the gas supplier would need to check who was the registered electricity supplier each time a job was raised to ensure the appropriate legal permissions had been put in place. The gas supplier would incur an additional internal administration cost for this activity.

There would also be an additional risk where a change of supplier event could have occurred in between the time when the appointment was made and when the actual meter exchange is carried out. Again the gas supplier would need to check who the supplier is at the time the appointment takes place to ensure the appropriate legal permissions have been put in place.

The working group discussed whether a standard model bi-lateral agreement could be agreed between the six largest suppliers which could then reduce the cost for putting a bi-lateral arrangement in place. The working group agreed that it would be difficult to agree a template that all parties would accept and therefore the full estimate for putting bi-lateral arrangements in place has been included in the analysis.

There are disadvantages that can be considered with the bi-lateral agreement option:

- There is no obligation on an electricity supplier to agree to a bi-lateral arrangement with a gas supplier. If any one electricity supplier refuses to sign a bi-lateral arrangement then the gas supplier will need to have processes in place to check who the electricity supplier is before arranging a visit to carry out a gas only installation.
- Each bi-lateral arrangement may, by its nature, have to be individually negotiated between the gas and electricity supplier. Therefore additional costs would be incurred in both negotiating and the ongoing management of the bi-lateral arrangements.

The benefits would be reduced where one or more Electricity Suppliers do not enter into the bi-lateral agreements. The following table shows the reduction in benefits where a lack of agreed contracts means customers are not able to take advantage of gas first, assuming an even spread of customers over suppliers.

% of customers with a gas first install	No. of contracts (46 x 33)	Cost of contracts (£m)	No. of customers covered (m)	No. of customers not covered (m)	Benefit available p/a (£m)
100	1,518	7.59	2.3	0	66.37
75	1,138	5.69	1.725	0.575	49.78
50	759	3.80	1.15	1.15	33.18
25	379	1.90	0.575	1.725	16.59

3. Joint electricity Meter Operator visit

This option would incur additional costs of both booking the additional visit and also the cost of the travel and time on site by the electricity meter operator. This additional visit may be more difficult to organise once all electricity suppliers are engaging in full smart meter roll-out as resources may be working a full capacity. Depending on the flexibility of the electricity supplier's agent delays may occur in the ability to install gas first at a time that meets the gas supplier's requirements,

Again, with this option gas suppliers will be reliant upon co-operation from competitor electricity suppliers. Additionally gas suppliers will not easily have visibility of who the electricity supplier or meter operator is in order to book the site visit.

5. Gas/Electricity concurrent smart installation

This option would be possible where the gas supplier is able to gain agreement from the electricity supplier to facilitate the installation of both smart meters at the same time. In this

scenario the electricity supplier would need to either fit an electricity smart meter that has compatible communications with the gas smart meter or install the gas first communications hub on behalf of the gas supplier. Although this is an option for achieving a gas smart meter installation it is not strictly “gas first” and therefore has not been included in the financial analysis of costs and benefits.

The advantages of this approach are that no additional site visit costs are incurred as both suppliers are required to install their smart meter as part of the programme. The additional costs are incurred in the administration cost of arranging the concurrent smart meter installation. The electricity supplier may also incur some asset stranding cost if they are potentially removing a non-smart electricity meter earlier than they may have otherwise planned.

There are a number of disadvantages to this option as follows:

- Formal legal agreements between the gas and electricity supplier may be required. If no formal agreements are put in place the gas supplier may suffer additional costs if the electricity supplier does not attend to carry out the concurrent installation when agreed.
- This option leaves gas suppliers completely dependent on co-operation of electricity supplier who has no incentive to agree a concurrent visit with the gas supplier.
- Work may be delayed as the gas supplier may have to wait for a particular date that the electricity supplier can accommodate which takes away the gas first driver for the overall proposal.
- The electricity supplier may not be deploying during foundation stage of rollout and may not have smart meters available to carry out a concurrent meter installation.
- Electricity Suppliers may rollout smart meters on a geographic basis which means that the gas supplier may be restricted as to which areas of the country this option is available in.
- Without formal agreements in place there is no obligation on electricity supplier to co-operate.
- Suppliers will have obligations to offer energy efficiency advice and the first one to attend has this obligation. It is unclear as to how this will work when both suppliers attend at the same time. Agreement will need to be made as to who is going to formally offer the advice.
- Electricity suppliers may not want to bring forward the meter exchange to meet gas suppliers’ requirements as the electricity meter may not be due for replacement until nearer the end of the rollout.

Gas suppliers will not be able to agree appointments with customers until the joint appointment has been agreed with electricity supplier. This may negatively impact on the customer experience.

6. Gas smart meter communications hub to be powered by other means other than incoming electricity supply.

The gas supplier could consider alternative means to power the gas communications hub other than the incoming electricity supply.

One alternative would be to power the device via the customer’s internal electricity supply. This would not be ideal as any supply taken after the electricity meter is susceptible to disconnection by a prepayment meter and wilful or accidental disconnection by the customer.

Another alternative would be to power the gas communications hub via a battery. Major meter manufacturers have advised that batteries cannot provide the energy density required to support SMETS type gas metering functionality over the intended life of a smart meter. Battery power would be incapable of providing anything more than simple automated meter reading functionality with perhaps a single outbound daily read for a maximum of 10 years.

Manufacturers state that major consumers of energy for a hub in a SMETS environment are:

- Running security code – especially if hardware based.
- Frequent communications over HAN system for reading and control
- Regular WAN communication with the Head End System
- Updates of firmware and tariff configuration
- Communications for prepayment applications
- Use of the HAN for consumer applications
- Provision of 'last gasp' communications functionality
- Further unknown requirements as may be imposed by a DCC system.

Essentially none of these would be practicable without a mains power supply.

As a result of this The working group has not gone any further with analysis of these scenarios.

7. Conclusion

The cost/benefit summary in Section 2 shows that the option to include changes to the DCUSA to facilitate Gas First provides the greatest benefit to consumers. Also from a qualitative analysis this appears to be the easiest to facilitate.

This option is closely followed by the option to use Bi-lateral agreements although this has the major disadvantage in that it relies on the voluntary agreement of a competitor to enter into the bi-lateral agreement and the benefits are eroded if some electricity suppliers choose not to enter into agreements.

The option to arrange for the electricity supplier's agent to carry out the de-energisation, gas communications hub install and re-energisation would increase costs to consumers overall.

The option to co-ordinate both smart and electricity meter installations provides some benefit to consumers although this option relies on both the electricity and gas suppliers having compatible communication hubs and both having smart meters deployed in the same area at the same time.

Appendix 1

Assumptions used in assessing costs used in Section 2

Note 1

£17,175 has been estimated as the cost to cover accession to the DCUSA and the MOCOPA. Indicative costs are estimated at £10,000 per gas supplier group for DCUSA as a one off cost to cover legal review of the contract and negligible ongoing costs. The rationale behind these figures is that recent signatories to the DCUSA have indicated that it took 2 -3 days work to review the DCUSA including legal costs. The DCUSA has around 750 pages however the workgroup felt that the whole document would not need to be reviewed and that sections 1, 2A and 3 (195 pages) would be the most relevant for a gas supplier to review. Ongoing costs would be minimal as any cost associated with attendance at DCUSA workgroups can be claimed back under the terms of the DCUSA and gas suppliers would only attend workgroup meetings if they perceived a benefit to their organisation. Indicative costs to accede to the MOCOPA are estimated at £7,175 per gas meter operative. The MOCOPA agreement consists of 115 pages and would not require as much time to review as the DCUSA. The £7,175 would cover the company's internal legal review costs.

Note 2

Indicative costs of putting a bi-lateral arrangement in place are estimated as a one off cost of **£5,000** per agreement to cover legal review and negotiation. The Working Group felt that the costs of maintaining these agreements going forward would be minimal.

Note 3

On each occasion the gas supplier needs to de-energise and re-energise the electricity supply the gas supplier will incur costs of **£80**, made up of:

- Appointment booking via electricity supplier – Indicative cost £10 per appointment. This cost covers the gas suppliers labour, call and system costs of booking an appointment with the electricity suppliers agent
- Chargeable job for de-energisation, installation/maintenance/removal and re-energisation – Indicative cost £70 per visit (Based on 2hr banded appointment) National Grid currently levy a transactional charge of £67.67 to carry out a domestic meter exchange

Note 4

The figure of £2,825 has been provided by MOCOPA as the annual subscription fee to maintain membership of MOCOPA and cover the annual audit.

Note 5

The figure of **£230,000** is calculated by multiplying the number of registered electricity suppliers by the indicative costs of putting the bi-lateral agreement in place i.e. $46 \times £5,000$.

Note 6

To enable a comparison of each solution a view needs to be taken as to the likely number of gas first installations that may be carried out in a year per gas supplier. The workgroup has assumed that, based on a total of 4.6m energy customers who buy their energy from different suppliers 50% will have an electricity smart meter installed first and 50% will have gas smart meter installed first. Therefore the assumption is that 50% of single fuel gas customers will not require the gas first solution as the gas supplier will be able to use the electricity smart meter communications hub. (Assumes SMETS 2 communications compatibility). For the cost/benefit we have assumed that the remaining 2.3m gas only customers are spread evenly amongst the big six energy suppliers and that these will have gas first smart meters installed evenly between 2014 and the end of 2019. $2,300,000/6/6 = 63,888$ rounded up to **64k** per gas supplier per annum.

Note 7

The figure of **£5,120,000** is the total cost of booking the meter operator visit and the actual visit itself multiplied by 64k

Note 8

The customer benefits have been calculated in line with DECCs Impact Assessment outlined in Section 3

Note 9

The figure of **£1,847,040** is calculated by multiplying the annual customer benefit of £28.86 by the total gas only smart meter installations per annum per supplier of 64k

The gas first solution will require a powered device that will be attached to the incoming electricity supply that will enable the gas supplier to communicate with the gas meter. The costs for developing, procuring and manufacturing this device have not been included in the analysis as this equipment will be required for all three "gas first" options.