

<b>Title:</b> <b>Energy Bill: Amendment to the Energy Act 2008 powers to implement and direct the rollout of smart meters</b>  <b>Lead department or agency:</b> DECC  <b>Other departments or agencies:</b>	<b>Impact Assessment (IA)</b>
	<b>IA No:</b> DECC0016
	<b>Date:</b> 01/12/2010
	<b>Stage:</b> Final
	<b>Source intervention:</b> Domestic: GB residential and SME premises
	<b>Type of measure:</b> primary legislation
	<b>Contact for enquiries:</b> Michael Harrison

## Summary: Intervention and Options

### What is the problem under consideration? Why is government intervention necessary?

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' account management and switching costs. Better information on patterns of use across networks will aid in network planning and development, including future smart grids. Government intervention is needed to ensure commercial interoperability and full market coverage. This will facilitate the capture of wider benefits to consumers, the environment, network operators and new businesses. The policy for smart meters therefore addresses the market failures in the energy markets described above (information asymmetries, lack of coordination and negative externalities from energy consumption).

The extension and amendment of the powers would enable the Government to address any issues that arose in the latter stages of roll-out and to ensure an efficient and effective roll out so that the business case is achieved.

### What are the policy objectives and the intended effects?

The objective of the Government policy on smart meters is to ensure a roll-out of smart metering to GB residential gas and electricity customers in a cost-effective way, which optimises the benefits to consumers, energy suppliers, network operators and other energy market participants and delivers environmental and other policy goals.

Amending the smart meter powers in the Energy Act 2008 and extending them by a further 5 years would give the Government the necessary powers to ensure an efficient roll out; allow Government to respond if and as necessary to new developments that could prevent the full benefits of smart metering being realised; and to make any necessary adjustments to the roll-out programme to ensure or improve delivery of the business case.

### What policy options have been considered? Please justify preferred option (further details in Evidence Base)

Options for the roll out of smart meters to domestic and small and medium non-domestic gas and electricity customers, including the option of doing nothing, have been covered by a range of Impact Assessments produced by DECC, the latest published in July 2010 ([http://www.decc.gov.uk/en/content/cms/consultations/smart\\_mtr\\_imp/smart\\_mtr\\_imp.aspx](http://www.decc.gov.uk/en/content/cms/consultations/smart_mtr_imp/smart_mtr_imp.aspx)).

The present Impact Assessment considers the impact of two options relating to taking powers in the Energy Bill 2010:

- Option 1 – not to amend the powers in the Energy Act 2008
- Option 2 – amending the Energy Act 2008 smart meter powers and extending them by a further five years (preferred option).

Option 2 is preferred as it provides the Government with the necessary powers to ensure an efficient roll out and to respond if necessary to new developments that could prevent the full benefits of smart metering being realised. It is however not possible at this stage to quantify the impacts of the potential interventions that could take place as a result of the proposed amendments as policy would need to be developed if the powers were exercised.

<b>When will the policy be reviewed to establish the actual cost and benefits and the achievements of the policy objectives?</b>	A further quantitative impact assessment will be produced if these powers are exercised.
<b>Are there arrangements in place that will allow a systematic collection of monitoring information for future policy review?</b>	These are currently being developed.

**Ministerial Sign-off** For consultation stage IAs: I have read the IA and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.



**Signed by the responsible Minister:**

**Date: 01/12/2010**

Description: "Not to amend the smart meters powers in the Energy Act 2008"

Price Base Year N/A	PV Base Year N/A	Time Period Years N/A	Net Benefit (Present Value (PV)) (£m)		
			Low: N/A	High: N/A	Best Estimate: N/A
<b>COSTS (£m)</b>		<b>Total Transition</b> (Constant Price) Years	<b>Average Annual</b> (excl. Transition) (Constant Price)	<b>Total Cost</b> (Present Value)	
Low		N/A	N/A	N/A	
High		N/A	N/A	N/A	
Best Estimate		N/A	N/A	N/A	
Description and scale of key monetised costs by 'main affected groups'					
<p><b>Other key non-monetised costs by 'main affected groups'</b></p> <p>In the absence of the appropriate powers after November 2013, the Government will be unable to adjust the roll out strategy in the latter stages of the roll out if this proves necessary, nor amend transmission licences, hence increasing the risk that the roll-out will not be delivered efficiently. This would have an impact on the central estimates of total costs of the roll out as presented in the July 2010 Impact Assessments (over £10bn cost over the period 2010-2030).                  ((<a href="http://www.decc.gov.uk/en/content/cms/consultations/smart_mtr_imp/smart_mtr_imp.aspx">http://www.decc.gov.uk/en/content/cms/consultations/smart_mtr_imp/smart_mtr_imp.aspx</a>))</p>					
<b>BENEFITS (£m)</b>		<b>Total Transition</b> (Constant Price) Years	<b>Average Annual</b> (excl. Transition) (Constant Price)	<b>Total Benefit</b> (Present Value)	
Low		N/A	N/A	N/A	
High		N/A	N/A	N/A	
Best Estimate		N/A	N/A	N/A	
Description and scale of key monetised benefits by 'main affected groups'					
<p><b>Other key non-monetised benefits by 'main affected groups'</b></p>					
<b>Key assumptions/sensitivities/risks</b>					

Impact on admin burden (£m):			Impact on policy costs (£m):			In scope
Costs: 0	Benefit: 0	Net: 0	Costs: 0	Benefits: 0	Net: 0	N/A

What is the geographic coverage of the policy/option? GB	Options
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# Summary: Analysis and Evidence

# Policy Option 2

Description: "Amend the Energy Act 2008 smart meter powers"

Price Base Year N/A	PV Base Year N/A	Time Period Years N/A	Net Benefit (Present Value (PV)) (£m)		
			Low: N/A	High: N/A	Best Estimate: N/A
<b>COSTS (£m)</b>	<b>Total Transition (Constant Price) Years</b>		<b>Average Annual (excl. Transition) (Constant Price)</b>		<b>Total Cost (Present Value)</b>
Low	N/A		N/A		N/A
High	N/A		N/A		N/A
Best Estimate	N/A		N/A		N/A
Description and scale of key monetised costs by 'main affected groups'					
Other key non-monetised costs by 'main affected groups'					
The amendment and extension of the existing Energy Act 2008 powers does increase the regulatory uncertainty for code and licence holders during the rollout period. However this should be mitigated by the fact that any use of the powers would be subject to detailed cost-benefit analysis, as well as to consultation with licence holders, Ofgem and other interested parties.					
<b>BENEFITS (£m)</b>	<b>Total Transition (Constant Price) Years</b>		<b>Average Annual (excl. Transition) (Constant Price)</b>		<b>Total Benefit (Present Value)</b>
Low	0		N/A		N/A
High	0		N/A		N/A
Best Estimate	0		N/A		N/A
Description and scale of key monetised benefits by 'main affected groups'					
Other key non-monetised benefits by 'main affected groups'					
The amendment of the powers will enable the Government, on the basis of evidence and a review process, to respond appropriately to developments to ensure an effective and efficient delivery of the roll out of smart meters. Benefits of the roll out of smart meters for domestic and non-domestic customers were estimated at £18bn over the period 2010-2030 in the July 2010 Impact Assessments.					
Key assumptions/sensitivities/risks					

Impact on admin burden (£m):			Impact on policy costs (£m):			In scope
Costs: 0	Benefit: 0	Net: 0	Costs: 0	Benefits: 0	Net: 0	N/A

What is the geographic coverage of the policy/option?	GB (residential and SMEs)
From what date will the policy be implemented?	Royal Assent

Which organisation(s) will enforce the policy?			DECC/Ofgem		
What is the total annual cost (£m) of enforcement for these			N/A		
Does enforcement comply with Hampton principles?			N/A		
Does implementation go beyond minimum EU requirements?			N/A		
What is the CO <sub>2</sub> equivalent change in greenhouse gas emissions (for preferred option)?			<b>Traded:</b> N/A	<b>Non-traded:</b> N/A	
Does the proposal have an impact on competition?			N/A		
Annual cost (£m) per organisation (excl. Transition) (Constant Price)	<b>Micro</b> N/A	<b>&lt; 20</b> N/A	<b>Small</b> N/A	<b>Medium</b> N/A	<b>Large</b> N/A
Are any of these organisations exempt?	N/A	N/A	N/A	N/A	N/A

## Evidence Base

### A. Introduction and Strategic Overview

#### Background to Smart Meter Policy

1. The coalition programme sets out the Government's commitment to rolling out smart meters, as well as setting the strategic context for the roll-out of smart meters alongside the establishment of a smart grid.
2. The Government is committed to ensuring that every home in Great Britain has smart energy meters, enabling people to manage their energy consumption and reduce their carbon emissions. This is a major programme which will take several years to complete. It will involve visits to 27 million homes and over 2 million small and medium non-domestic sites, and will bring changes with effects across the whole energy industry<sup>1</sup>.
3. The rollout of smart meters will contribute to meeting the UK's<sup>2</sup> and EU's<sup>3</sup> greenhouse gas (GHG) emission reduction target by 2020, by encouraging consumers and businesses to reduce their energy consumption. Smart meters will help consumers to better understand their energy consumption and make savings, reduce supplier costs, and enable new services including demand-side management. Smart metering is also a key enabler of a future 'Smart Grid', as well as facilitating the uptake of distributed generation and electric vehicles.
4. As part of the Third Package of Energy Liberalisation Measures adopted on 13 July 2009, EU Member States are obliged to "*ensure the implementation of intelligent metering systems that shall assist the active participation of consumers in the gas and electricity markets*"<sup>4</sup> - in other words, to roll out some form of smart metering to domestic consumers. This requirement is subject to the results of an economic assessment.
5. In July 2010, Impact Assessments for the GB-wide smart meter roll-out for the domestic and small and medium non-domestic sectors were published (see Annex for a summary of the quantified impacts of the roll-out). These build upon the work DECC has undertaken in the last 3 years to assess the economic case for rolling out smart meters<sup>5</sup>. The July 2010 Impact Assessment estimates that under the 6. Government preferred option the total cost of the roll out to all homes in GB is £10 billion and delivers benefits of £15 billion, a net benefit to GB of £5 billion over the next 20 years. For the roll out to small and medium non-domestic (SME) sites, total costs are estimated to be £600 million, with total benefits estimated at £2.8 billion – producing a net benefit to GB of £2.2 billion over the next 20 years. These estimates remain unchanged for the two options considered in the present Impact Assessment.

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<sup>1</sup> **Smart Metering Implementation Programme Prospectus.** Available at: <http://www.decc.gov.uk/assets/decc/Consultations/smart-meter-imp-prospectus/220-smart-metering-prospectus-condoc.pdf>

<sup>2</sup> **European Energy and Climate Change.** Available at [http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/change\\_energy/european/european.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/change_energy/european/european.aspx)

<sup>3</sup> **A low-carbon UK.** Available at: [http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/lc\\_uk/lc\\_uk.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/lc_uk.aspx)

<sup>4</sup> **The European Electricity Grid Initiative: Roadmap 2010-18 and Detailed Implementation Plan 2010-12.** Available at: [http://www.smartgrids.eu/documents/EEGI/EEGI\\_Implementation\\_plan\\_May%202010.pdf](http://www.smartgrids.eu/documents/EEGI/EEGI_Implementation_plan_May%202010.pdf)

<sup>5</sup> **Impact Assessment of a GB-wide smart meter roll-out for the domestic sector.** Available at: <http://www.ofgem.gov.uk/e-serve/sm/Documentation/Documents1/DECC%20-%20Impact%20assessment%20-%20Domestic.pdf>

7. DECC's impact assessments were published with the Smart Meter Prospectus. The Prospectus sets out proposals for how smart metering will be delivered, including design requirements, central communications, data management and the approach to rollout, and represents the joint views of the Department of Energy and Climate Change (DECC) and the Gas and Electricity Markets Authority (GEMA)<sup>6</sup>.

### Proposals in relation to smart meters in the Energy Bill

8. The Secretary of State already has broad powers to implement and direct the roll-out of smart meters under sections 88-91 of the 2008 Energy Act<sup>7</sup>.

9. The Energy Bill 2010 seeks to amend the powers in the Energy Act 2008 relating to smart meters so that:-

- i) the Secretary of State is able to modify transmission licences as well as electricity distribution and supply and gas transportation, shipping and supply licences, which are all covered in the existing legislation;
- ii) the scope of the Secretary of State's powers in relation to reviewing and directing roll-out is amended; and
- iii) they expire in November 2018 rather than November 2013.

### B. The issue (rationale for intervention)

10. Smart metering is a key enabling technology for managing energy systems more efficiently and providing new information and services to consumers

11. Existing metering allows for a simple record of energy consumption to be collected, mainly by physically reading the meter. Whilst this allows for energy bills to be issued, there is limited opportunity for consumers or suppliers to use this information to manage energy. On average suppliers only know how much energy a household consumes after a quarterly (or less frequent) meter read, and consumers are generally only aware of consumption on a quarterly, historic basis, unless they take active steps to monitor the readings on their meters. In addition, many of those quarterly reads may be estimates made by the supplier. Consumers do not have sufficiently dynamic and useful information to enable them to easily manage their energy consumption. In addition problems with accuracy of data and billing create costs for suppliers and consumers, causing disputes over bills (complaints) and problems with the change of supplier process, thereby diminishing the customer experience and potentially hindering competition.

12. Smart meters and the provision of real-time information help address these issues, enabling consumers to access more information about energy use and cost. In the absence of intervention by Government, suppliers would roll out only limited numbers of smart meters. Government intervention is also needed to ensure commercial interoperability, full market coverage and the delivery of the full range of benefits for Great Britain as a whole. The policy for smart meters therefore addresses the market failures in the energy markets described above (information asymmetries, lack of coordination and negative externalities from energy consumption).

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<sup>6</sup> **Smart Metering Implementation Programme Prospectus.** Available at: <http://www.decc.gov.uk/assets/decc/Consultations/smart-meter-imp-prospectus/220-smart-metering-prospectus-condoc.pdf>

<sup>7</sup> Sections 88-91 Energy Act 2008

13. Under the Energy Act 2008, the Secretary of State already has broad powers to make licence and code modifications to require electricity and gas licensees to roll out smart meters to all gas and electricity customers. The existing Energy Act 2008 powers allow changes to be made to electricity supply and/or distribution licences as well as to gas supply, transportation and/or shipper licences. These powers currently expire in November 2013.

14. The Energy Bill 2010 seeks to amend the existing 2008 Energy Act provisions to allow the Secretary of State to modify transmission licences in addition to the other categories of licence already specified in the 2008 Energy Act; to modify the scope of the powers to direct roll-out by including powers to make area-based licence or code modifications; to allow modifications to require the provision of information to the Secretary of State and Ofgem to enable the Secretary of State to review the efficiency and effectiveness of the smart meter roll-out; and to extend the powers for a further five years.

15. When the original Energy Act 2008 powers were drafted it was not envisaged that modifications to transmission licences would be necessary to facilitate the roll out of smart meters. However, work carried out during Phase 1 of the smart metering programme suggests that changes to transmission licences may be necessary to ensure the effective introduction of the new central communications arrangements which will support all smart meters. This is because elements of existing industry data arrangements which may need to be modified as part of the roll-out are established under such licences. The proposed amendment will ensure that the Secretary of State has the necessary powers to introduce these new arrangements in the most effective manner if they are required.

16. The July 2010 [Prospectus](#) proposes that in the early stages of the rollout suppliers should have broad flexibility over the pattern of their installations to allow a quick start of the rollout, to respond to customer demand and to develop their plans in light of experience and feedback, but that a review of rollout in the early stages should take place. The review process would draw on the analysis and evidence from the first stages of the rollout and could potentially propose modifications to the rollout strategy to address issues identified or provide for enhanced benefits. These could include measures to facilitate consumer engagement, promote co-operation at a local level including with trusted third parties, measures to reach vulnerable groups, to facilitate the development of smart grids, or support energy efficiency initiatives. In order to ensure that sufficient information is available and to implement any measures following such a review process, the Government will need adequate powers and for these to continue beyond November 2013. This will also be achieved by the proposed amendment.

17. The existing Energy Act provisions would require Government to consult before exercising these powers. Any use of the powers would be accompanied by an Impact Assessment setting out the costs and benefits of the proposed intervention.

## C. Objectives

### Objectives of the Energy Bill

18. This Bill aims to deliver a national programme of energy efficiency measures to homes and businesses<sup>8</sup>.

19. The key objectives of the Bill are to:

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<sup>8</sup> **Queens Speech – Energy Bill.** Available at: <http://www.number10.gov.uk/queens-speech/2010/05/queens-speech-energy-security-and-green-economy-bill-50650>

- Provide a step change in the delivery of energy efficiency measures to homes and businesses.
- Put in place a framework to provide a future with secure, low carbon energy supplies and fair competition in the energy markets.

### Objectives of the Smart Meter Provisions in the Energy Bill

20. The proposed amendment would amend the existing Energy Act 2008 smart meter powers as well as extending the current powers by a further 5 years. This would provide the Government with the necessary powers to ensure an efficient roll out; allow Government to respond if and as necessary to new developments that could prevent the full benefits of smart metering being realised; and to make any necessary adjustments to the roll-out programme to ensure or improve delivery of the business case.

### D. Option Identification

21. Options for the roll out of smart meters to domestic and small and medium non-domestic gas and electricity customers, including the option of doing nothing, have been covered by a range of Impact Assessments produced by DECC, the latest published in July 2010.

22. The present Impact Assessment considers the impact of two options relating to taking powers in the Energy Bill 2010:

- Option 1 – not to amend the powers in the Energy Act 2008 relating to smart meters.
- Option 2 – to amend the powers in the Energy Act 2008 relating to smart meters as described in section B and to extend the powers by a further five years (preferred option)

### E. Analyse the options (costs and benefits)

23. It is not possible at this point to make a quantitative assessment of the modifications to licences / codes that the Secretary of State might make under the proposed amendments. The assessment at this stage is therefore qualitative rather than quantitative.

24. Under both options the existing Energy Act 2008 powers allow the Government to implement the roll-out of smart meters as set out in the July 2010 IA. However, in the absence of the appropriate powers up to and after November 2013, this could undermine the Government's ability to implement smart metering in the most efficient manner; and/or prevent the Government from adjusting the roll out strategy in its latter stages to ensure the full set of benefits, particularly consumer benefits, are realised.

25. The amendment of the existing Energy Act powers as described in section B as well as the extension of the powers for a further five years does increase the regulatory uncertainty to which code and licence holders are subject to during the rollout period. However this should be mitigated by the fact that the existing Energy Act provisions require the Government to consult before exercising these powers. Any use of the powers would also be accompanied by an Impact Assessment setting out the costs and benefits of the proposed intervention.

### F. Risks and assumptions (administrative burden, policy savings calculations and net costs to businesses)

26. The assessment is largely qualitative at this stage, as it is unclear what measures might be required to ensure the successful delivery of the roll-out and full benefits realisation. A further quantitative impact assessment will be produced if these powers are exercised.



Please refer to the July 2010 Impact Assessment for a discussion of the costs, benefits, risks and assumptions of the roll out as a whole.

27. Exercising the amended powers through modifications to licences could result in a net cost to businesses. Were the powers to be exercised, they would be accompanied by an Impact Assessment setting out the costs and benefits of the proposed intervention, including net costs to businesses. The amendment alone of the powers as discussed in the present IA does not result in an increase to net costs to businesses.

#### G. Enforcement

See July 2010 Impact Assessment.

#### H. Recommendations – Next Steps and description of implementation plan

See July 2010 Impact Assessment <sup>9</sup>

#### I. Implementation – wider impact

See July 2010 Impact Assessment <sup>10</sup>

#### K. Monitoring and Evaluation

See July 2010 Impact Assessment <sup>11</sup>

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<sup>9</sup> **Impact Assessment of a GB-wide smart meter roll-out for the domestic sector.** Available at: <http://www.ofgem.gov.uk/e-serve/sm/Documentation/Documents1/DECC%20-%20Impact%20assessment%20-%20Domestic.pdf>

<sup>10</sup> ditto

<sup>11</sup> ditto

Annex. Summary of the economic impact of the roll out of smart meters

	<b>Domestic</b>	<b>Non-domestic</b>
Costs (£m, PV)	£10,051	£595
Benefits (£m, PV)	£15,040	£2,805

Annual profile of monetised costs and benefits as estimated under the preferred option in the July 2010 Smart Meters Impact Assessment - (£m) constant prices (residential sector).

	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Transition costs[1]	0	50	69	90	122	137	146
Annual recurring cost	0	0	57	201	374	536	698
Total annual costs	0	50	126	292	496	673	844
Transition benefits	0	0	0	0	0	0	0
Annual recurring benefits	0	0	84	265	505	732	959
Total annual benefits	0	0	84	265	505	732	959

	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Transition costs	142	122	99	87	26	24	21
Annual recurring cost	828	873	898	900	893	890	888
Total annual costs	970	995	997	988	919	913	909
Transition benefits	0	0	0	0	0	0	0
Annual recurring benefits	1,151	1,244	1,314	1,358	1,393	1,426	1,465
Total annual benefits	1,151	1,244	1,314	1,358	1,393	1,426	1,465

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>
Transition costs	18	15	13	12	12	12	12
Annual recurring cost	888	900	909	899	884	870	857
Total annual costs	906	916	921	911	896	882	870
Transition benefits	0	0	0	0	0	0	0
Annual recurring benefits	1,509	1,643	1,735	1,782	1,824	1,856	1,889
Total annual benefits	1,509	1,643	1,735	1,782	1,824	1,856	1,889

**Annual profile of monetised costs and benefits as estimated under the preferred option in the July 2010 Smart Meters Impact Assessment - (£m) constant prices (small and medium non-domestic sites)**

	2010	2011	2012	2013	2014	2015	2016
Transition costs <sup>12</sup>	0	0	0.6	2.1	3.6	4.5	4.9
Annual recurring cost	0	0	2.7	14.7	29.3	44.0	60.0
Total annual costs	0	0	3.3	16.8	32.8	48.6	64.9
Transition benefits	0	0	0	0	0	0	0
Annual recurring benefits	0	0	13.4	50.2	97.7	144.9	193.8
Total annual benefits	0	0	13.4	50.2	97.7	144.9	193.8

	2017	2018	2019	2020	2021	2022	2023
Transition costs <sup>13</sup>	4.2	2.0	-0.1	-1.3	-1.8	-2.2	-2.6
Annual recurring cost	72.0	74.1	73.6	70.6	65.8	61.0	56.3
Total annual costs	76.2	76.1	73.5	69.3	64.0	58.8	53.8
Transition benefits	0	0	0	0	0	0	0
Annual recurring benefits	234.7	251.6	261.8	266.9	269.1	270.9	273.1
Total annual benefits	234.7	251.6	261.8	266.9	269.1	270.9	273.1

	2024	2025	2026	2027	2028	2029	2030
Transition costs	-2.9	-3.2	-3.4	-3.4	-3.2	-2.3	-1.2
Annual recurring cost	51.7	47.6	43.3	37.9	32.4	27.0	21.7
Total annual costs	48.8	44.4	39.8	34.6	29.1	24.6	20.5
Transition benefits	0	0	0	0	0	0	0
Annual recurring benefits	276.9	300.3	311.7	311.3	310.9	309.1	306.3
Total annual benefits	276.9	300.3	311.7	311.3	310.9	309.1	306.3

**Emission savings by carbon budget period as estimated under the preferred option in the July 2010 Impact Assessment on the roll out of smart meters (MtCO<sub>2</sub>e) (residential and small and medium non-domestic sites)**

<sup>12</sup> We consider transition costs to include only those costs incurred during the rollout- costs of disposal of legacy meters and pavement reading inefficiencies. Some of these costs run to 2030 as they have been annuitised in the model, but in practice would not occur beyond the rollout. Industry set up costs are covered in the domestic IA – the rollout of smart meters to SMEs will not require additional costs in this area. There are no transition benefits for the smart meter policy, as benefits are assumed to accrue continuously.

<sup>13</sup> Note that from 2019, the one-off, transition costs become negative. This is largely driven by costs from pavement reading inefficiencies (increased costs of reading legacy meters) when compared to the counterfactual. Under both options considered in the analysis there would be no more pavement reading costs towards the end of the rollout, whereas in the counterfactual (with only 50% of smart meters rolled out) some would remain. Hence subtracting the counterfactual costs produces a negative cost or cost saving.

Sector		Emission Savings (MtCO <sub>2</sub> e) - By Budget Period		
		CB I; 2008-2012	CB II; 2013-2017	CB III; 2018-2022
Power sector	Traded	0.00	0.00	0.00
	Non-traded	0.00	0.00	0.00
Transport	Traded	0.00	0.00	0.00
	Non-traded	0.00	0.00	0.00
Workplaces & Industry	Traded	0.02	0.93	1.64
	Non-traded	0.04	2.06	3.56
Homes	Traded	0.08	3.11	5.74
	Non-traded	0.08	2.80	4.88
Waste	Traded	0.00	0.00	0.00
	Non-traded	0.00	0.00	0.00
Agriculture	Traded	0.00	0.00	0.00
	Non-traded	0.00	0.00	0.00
Public	Traded	0.00	0.00	0.00
	Non-traded	0.00	0.00	0.00
<b>Total</b>	Traded	0.10	4.04	7.38
	Non-traded	0.12	4.86	8.44
<b>Cost effectiveness</b>	% of lifetime emissions below traded cost comparator	100%		
	% of lifetime emissions below non-traded cost comparator	100%		

\* For non-monetised benefits please see sum