

Title: Legislation to require energy suppliers to provide key, personal information on consumers bills in a machine readable format IA No: DECC0152 Lead department or agency: Department of Energy and Climate Change Other departments or agencies:	Impact Assessment (IA)
	Date: 23/07/2014
	Stage: Final
	Source of intervention: Domestic
	Type of measure: Secondary legislation
Contact for enquiries: lven.stead@decc.gsi.gov.uk	
Summary: Intervention and Options	RPC: RPC Opinion Status

Cost of Preferred (or more likely) Option				
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCBS in 2009 prices)	In scope of One-In, Two-Out?	Measure qualifies as
£-7.2m	£-7.2m	£1.2m	Yes	IN

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

The majority of domestic gas and electricity consumers do not engage in the retail electricity and gas markets through switching their energy supplier. The Office for Gas and Electricity Markets (Ofgem) estimated in its Retail Market Review (RMR) that only 5-10% of customers are proactive switchers.¹ This lack of engagement and switching leads to the market not operating as effectively as it could, potentially resulting in higher prices for consumers due to a lack of competitive pressure. As identified by Ofgem in its RMR,² one of the key barriers to effective consumer engagement in the retail energy market is a lack of clarity in the information provided by suppliers on tariff options and energy usage.³ Customers of the largest six energy suppliers can currently, if they are able to do so electronically, access key data on their energy consumption, tariff and expenditure electronically through the BIS led Midata programme. However, Government is concerned that the associated engagement benefits are currently inaccessible to other consumer segments. Government intervention is necessary because suppliers do not have sufficient incentives to voluntarily provide customers with their own data in an accessible, machine readable format.

What are the policy objectives and the intended effects?

The Government's objective is to take appropriate action to ensure that almost all domestic retail energy consumers (i.e. not just customers of the largest six energy suppliers who can receive data electronically) benefit from access to key data on their own energy consumption, tariff and expenditure in a form which is clear, easy to understand and facilitates frictionless data transfer. Data provided in this format would help overcome an informational barrier to consumer engagement, bringing about additional benefits to those brought about by Ofgem's implementation of its RMR proposals.⁴ Third sector volunteers, providing vulnerable consumers with 'assisted action' through the Big Energy Saving Network and other third sector led outreach events, should also be able to make use of the machine readable information to encourage switching.⁵ Machine readable formats will also allow third party intermediaries (TPIs) to develop services and products which help consumers, by frictionlessly uploading and analysing their data for them to provide tailored cross-market tariff comparisons. As a result, domestic consumers will be privy to quicker, easier tariff comparisons which should lead to increased switching within and between suppliers. In turn, this should increase competitive pressure in the retail energy market, thereby making it operate more effectively in the interests of consumers.

¹ Ofgem (2011) 'The Retail Market Review – Findings and Initial Proposals: Supplementary appendices' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39709/rmrappendices.pdf>

² Ofgem (2013) 'The Retail Market Review - Final domestic proposals', pp.15-16 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39350/retail-market-review-final-domestic-proposals.pdf>

³ Ipsos MORI (2012) 'Consumer engagement with the energy market, information needs and perceptions of Ofgem - Findings from the Ofgem Consumer First Panel Year 4: second workshops (held in March 2012)', pp.25-27 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39452/consumer-engagement-energy-market-information-needs-and-perceptions-ofgem.pdf>

⁴ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

⁵ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

We have considered the following options:

Option 0: Do nothing to require machine readable images on domestic retail paper energy bills and statements of account.

Option 1: (preferred option) Oblige suppliers to place, on all domestic retail consumers' paper energy bills, a non-proprietary machine readable format which if scanned by a generic smartphone reader would provide access to 12 key pieces of data in a manner which is clear and easy to understand.

Only one policy option is considered in this IA because the primary powers which exist in the Energy Act are narrowly defined and are intended to complement other regulatory and non-regulatory measures to increase consumer engagement in the energy market. The Act unambiguously gives the government powers to require suppliers to place machine readable formats on energy bills, to address the informational barriers to consumer engagement set out further in the Evidence Base below.⁶

These other measures, to help drive consumer engagement, include Ofgem's Retail Market Review reforms as well as non-legislative programmes, such as Ofgem's "Be an energy shopper" public information campaign to promote consumer engagement⁷ and DECC's outreach initiatives such as Big Energy Saving Week and the Big Energy Saving Network.

Option 1 has been assessed against a "do nothing" baseline, Option 0, in which the powers, granted by the preceding primary legislation to oblige suppliers to place consumers' data in machine readable formats on domestic retail energy bills, are not exercised.

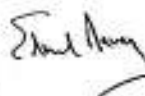
Option 1 is the preferred option because it helps to address a specific informational barrier to domestic consumer engagement in the retail energy market – lack of clarity in the information provided by suppliers on tariff options and energy usage – which cannot be overcome with alternative policy options and non-regulatory approaches.

Will the policy be reviewed? It will be reviewed. If applicable, set review date: 01 / 2018

Does implementation go beyond minimum EU requirements?	N/A				
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	Micro: No	< 20: No	Small: No	Medium: Yes	Large: Yes
What is the CO2 equivalent change in greenhouse gas emissions? (Million tonnes CO2 equivalent)	Traded: NA		Non-traded: NA		

I have read the Impact Assessment 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: 4th December 2014

⁶ See section 139 of the Energy Act 2013, available at: <http://www.legislation.gov.uk/ukpga/2013/32/section/139/enacted>

⁷ Available online at: <https://www.ofgem.gov.uk/press-releases/21-million-brits-missing-trick-shopping-better-energy-bills>

Description: Oblige suppliers to place, on all domestic retail consumers' paper energy bills, a non-proprietary machine readable format which if scanned by a generic smartphone reader would provide access to 12 key pieces of data in a manner which is clear and easy to understand.

FULL ECONOMIC ASSESSMENT

Price Base: Year 2014	PV Base: 2014	Time Period: 5 years	Net Benefit (Present Value (PV)) (£m)		
			Low: -7.5	High: -6.8	Best Estimate: -7.2

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	N/A	0.2	6.8
High	N/A	0.3	7.5
Best Estimate	3.4	0.3	7.2

Description and scale of key monetised costs by 'main affected groups'

Under this option, suppliers will incur one off set up costs. These will include acquiring software to produce the machine readable image, redesigning the bill and changing the bill generation and printing processes. Suppliers will also face the on-going costs of printing the image on consumer bills.

Other key non-monetised costs by 'main affected groups'

Volunteers working as part of the DECC funded Big Energy Saving Network and other third sector led outreach events, targeting vulnerable consumers with a programme of 'assisted action', will be able to make use of the machine readable images to encourage switching.⁸ Easier access to the information required to compare tariffs and switch supplier can also be expected to increase levels of switching, compared to the baseline scenario, amongst the wider population (those not targeted by outreach events).

Furthermore, it is expected that third parties, for example switching sites, will develop applications to utilise the data embedded in the machine readable formats in order to offer consumers tailored cross-market tariff comparisons.⁹ DECC considers it highly likely that third parties, for example switching websites, will develop these applications.

To the extent that these aforementioned groups of consumers realise savings through increased levels of switching, compared to the baseline scenario, economic surplus will be reallocated from suppliers to consumers, representing an indirect cost for energy suppliers.

It has not been possible to monetise these costs due to uncertainty about:

- the degree to which the machine readable images will bring about additional switching, and the timescales over which this could occur, on top of the level which would be expected in the baseline scenario; and
- the precise likelihood of, and timescales for, third parties, for example switching sites, developing applications to utilise the machine readable formats.

There may be an opportunity cost to suppliers resulting from the space on bills and statements of account taken up by the machine readable formats.

⁸ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

⁹ BIS (2014) 'Feasibility study on the use of QR codes in the energy sector', p.17 [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276198/bis-14-519-midata-programme-feasibility-study-on-use-of-qr-codes-in-energy-sector.pdf

BENEFITS (£m)	Total Transition		Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
	(Constant Price)	Years		
Low	N/A	1	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' It has not been possible to monetise the benefits of option one due to lack of evidence and the level of uncertainty around the exact impacts of the policy. See the 'Non-Monetised Benefits' section which follows for further explanation.				

Other key non-monetised benefits by 'main affected groups'

It should be noted that the following benefits, relative to the baseline scenario, are expected to decrease gradually over time as the smart meter rollout approaches completion in 2020. Machine readable formats on bills will be rendered less directly useful by the rollout of smart meters as, through these meters, consumers will be able to easily access key data on their own energy consumption, tariff and expenditure through their smart meters.

Consumers will benefit from easier access to their own, key data in a clear and easy to understand format. The improved availability of this information may increase consumer engagement in the retail energy market.

Volunteers working as part of the DECC funded Big Energy Saving Network and other third sector led outreach events, targeting vulnerable consumers with a programme of 'assisted action', will be able to make use of the machine readable images to encourage switching. Easier access to the information required to compare tariffs and switch supplier can also be expected to increase levels of switching, compared to the baseline scenario, amongst the wider population (those not targeted by outreach events).

Furthermore, it is expected that third parties, for example switching sites, will develop applications to utilise the data embedded in the machine readable formats in order to offer consumers tailored cross-market tariff comparisons. DECC considers it highly likely that third parties, for example switching websites, will develop these applications.

To the extent that these aforementioned groups of consumers realise savings through increased levels of switching, compared to the baseline scenario, economic surplus will be reallocated from suppliers to consumers, representing an indirect benefit for domestic retail energy consumers.

Additionally, as the energy market is not perfectly competitive, suppliers may currently price above marginal cost for a proportion of their customer's tariffs, which may cause 'deadweight loss' to society. By increasing competitive pressure in the retail energy market, the policy may reduce this 'deadweight loss' and bring about net gains to society. On this basis, the gains to consumers brought about by increased levels of switching may be expected to slightly outweigh the corresponding losses to producers.

Suppliers may choose to comply with the policy by optimising the consumers experience gained from a 'vanilla' reading, for example by generating URL web addresses and offering consumers a choice of uploading their data into an optimised section of their suppliers website.¹⁰ These web pages could manipulate the data, for example to allow intra-supplier tariff comparisons, which would represent an indirect benefit for consumers.

It has not been possible to monetise these benefits due to uncertainty about:

- the degree to which the machine readable images will bring about additional switching, and the timescales over which this could occur, on top of the level which would be expected in the baseline scenario;
- the precise likelihood of, and timescales for, third parties, for example switching sites, developing applications to utilise the machine readable formats;
- the current price and marginal cost structure of the retail energy market; and
- the extent to which the policy will increase competitive pressure in the retail energy market.

Wider non-monetised benefits include increased competition and innovation, new and expanding intermediary markets, and changes in energy consumption.

¹⁰ A 'vanilla' reading is the result of scanning the machine readable format with a common, freely available scanning application on smartphone or similar device.

Key assumptions/sensitivities/risks

3.5

The appraisal period used to assess Option 1 is the 5 years from 2015 – 2019 despite the legislation having a sunset clause meaning the power may not be exercised after 31st December 2018. However, the appraisal period is justified because we can expect the legislation to be extended until the roll out of smart meters is universal. From 2020 onwards, the costs and benefits of the policy can be expected to be zero because the legislation is not expected to be extended beyond the end of 2019. This is because the full roll out of smart meters should be completed by 2020, rendering the need for machine readable information on bills less directly useful. Domestic consumers will be able to access key data on their own energy consumption, tariff and expenditure through their smart meters.¹¹

The EANCBS has been calculated for the five year period over which the policy is expected to be active, from 2015-2019.

For any given supplier, there is a risk that they opt to comply with the legislation by choosing a machine readable format which the market later renders obsolete, which would potentially be costly for that supplier.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 1.2	Benefits: 0	Net: -1.2	Yes	IN

¹¹ DECC and Ofgem (2011) 'Smart Metering Implementation Programme - Response to Prospectus Consultation' [web] available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42742/1475-smart-metering-imp-response-overview.pdf

Evidence Base (for summary sheets)

Background

1. This Impact Assessment (IA) examines the implementation of the Primary Legislation powers, which were the subject of a previous IA,¹² to require energy suppliers to provide access to key tariff and usage information, on energy bills and statements of account, to domestic customers in a form that allows smart phones, or similar devices, to read and use it (referred to as "machine readable format" throughout the IA). This IA accompanies a Government response¹³ to the recently concluded Government consultation on the implementation of these powers.¹⁴
2. Only one policy option is considered in this IA because the primary powers which exist in the Energy Act are narrowly defined. The Act unambiguously gives the government powers to require suppliers to place machine readable formats on energy bills.¹⁵
3. This proposed piece of legislation is designed to address a specific informational barrier to domestic consumer engagement in the retail energy market (lack of clarity in the information provided by suppliers on tariff options and energy usage) and is part of a wider landscape of government initiatives to improve engagement in the retail energy market. Please see the 'Other initiatives to improve consumer engagement' section below for further details. It will also build upon the benefits brought about by Ofgem's implementation of its RMR proposals.¹⁶

Consumer Empowerment and Midata

4. In April 2011, the Government launched its Midata project, to allow domestic consumers to view, access and use their personal and transaction data in a way that was portable and safe, as part of its Consumer Empowerment Strategy.¹⁷ As part of this project the "Big 6" energy suppliers, which supply around 95% of domestic energy customers, have already agreed to give domestic consumers access to their consumption and tariff data securely. Consumers can elect to receive this in a data file which can be sent to their own email address, or view the data on their supplier's website. Consumers can use this information to better understand their consumption and compare their tariff details to other offers in the market.
5. The Department for Business, Innovation and Skills (BIS) published a consultation on the Government's Midata initiative in July 2012¹⁸, seeking views on the need for legislation requiring suppliers of goods and services to provide, on request of the consumer, personal transaction data in an electronic format. The Government response to the consultation, published November 2012,¹⁹ sets out, amongst other things, the leading role of the energy sector in the Midata programme.

¹² DECC (2013) 'Consumer Tariff Amendments (power g) - Power to require suppliers to provide key information to customers in a form that allows smart phones to read and use it' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/197629/consumer_tariff_amendments_powers_g.pdf

¹³ The Government response is currently being drafted and will be published alongside this IA.

¹⁴ The original Consultation document is available online at: <https://www.gov.uk/government/consultations/a-consultation-on-proposals-to-amend-domestic-energy-supply-licence-conditions-requiring-provision-of-key-energy-data-in-a-machine-readable-format>

¹⁵ See section 139 of the *Energy Act 2013*, available at: <http://www.legislation.gov.uk/ukpga/2013/32/section/139/enacted>.

¹⁶ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

¹⁷ BIS (2011) 'Better choices: better deals. Consumers powering growth' [web] available at:

<https://www.gov.uk/government/publications/better-choices-better-deals-strategy-helping-consumers-make-better-choices>

¹⁸ BIS (2012) 'Midata 2012 review and consultation' [web], available at: <https://www.gov.uk/government/consultations/midata-2012-review-and-consultation>

¹⁹ *ibid*

6. Following this, amendments were made to the Enterprise and Regulatory Reform Bill to establish an order-making power to require suppliers to provide access, upon request, to consumers own transaction data in an electronic format. The Enterprise and Regulatory Reform Act achieved Royal Assent in April 2013.²⁰ These powers remain unexercised and voluntary progress is still being sought from the energy, banking (current accounts and credit cards) and mobile phone sectors, with BIS currently assessing the results of a review into progress in these sectors, with automated access to Midata for third party intermediaries (TPIs) being one of the key outstanding issues.
7. The Midata project provides proof of concept. It has shown how consumer data release can operate and progress has been made on establishing a vision and principles. We also understand better the current consumer and business perceptions and the need for safeguards when consumers use their data.
8. In DECC's discussion document 'Ensuring a Better Deal for Consumers', the government proposed taking this a step further by not only providing consumers data in an electronic format, but one that would make this data instantly available and portable.²¹ Contingent on the development of applications by third party intermediaries, data in such a format will give consumers the ability to frictionlessly upload that data to search for a better deal.

Smart Phones and Machine Readable Formats

9. There are a number machine readable formats that allow smart phones to read and use the information contained within it. Currently the most typical format is a Quick Response (QR) Code,²² but there are also similar technologies, such as EAN bar codes.
10. The potential for helping consumers through smart phones is large and increasing rapidly, with 62% of UK adults using such a device as of late 2013 (up from 54% in 2012), including 20% of those aged between 65 and 74.²³ In addition, there has also been a growth in household take-up of tablet computers (which can typically also read machine readable formats), with 30% of UK adults now using a tablet PC to go online as of late 2013 (up from 16% in 2012), including 17% of those aged between 65 and 74.²⁴ If third party intermediaries were to develop applications which can read and utilise the machine readable formats, energy consumers who own a smart phone or similar device, and are aware of the benefits of these applications would then be able to use them to quickly and easily compare tariffs and switch supplier.
11. Whilst machine readable formats would benefit those who have their own device, it potentially has a wider reach via friends and family and advisory services such as Citizens Advice. In particular they could be used to assist to vulnerable consumers, who are targeted by outreach events. Ofgem, in their Retail Market Review consultation document, cited evidence that "friends and family were also seen as useful sources of information and advice. This appeared to be especially true for older and some more vulnerable consumers".²⁵ Therefore, these machine readable formats could benefit older and vulnerable consumers through their friends and relatives providing the smart phone or similar devices to read the formats.
12. Furthermore if, as is expected, third party intermediaries were to develop applications which can read and utilise the machine readable formats, older and vulnerable consumers could also reap the benefits of these applications via their friends and family who own smart phones or similar devices.

²⁰ Detailed legal information on this act is available at: <http://www.legislation.gov.uk/ukpga/2013/24/contents/enacted>

²¹ DECC (2012) 'Ensuring a better deal for energy consumers: DECC discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66515/6996-better-deal-energy-consumers.pdf

²² A QR code is a form of matrix barcode consisting of black squares arranged on a white background. It is characterised by fast readability and greater storage capacity compared to standard UPC barcodes.

²³ Ofcom (2014) 'Adults' Media Use and Attitudes report 2014', p. 19 [pdf], available at: http://stakeholders.ofcom.gov.uk/binaries/research/media-literacy/adults-2014/2014_Adults_report.pdf

²⁴ Ibid, p. 18.

²⁵ Ofgem, (2012) 'The Retail Market Review: Updated domestic proposals' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39457/retail-market-review-updated-domestic-proposals.pdf>

13. According to comScore, a market analytics firm, 11.4% of the UK smartphone users scanned QR codes using their device in the year to July 2012.²⁶ However, there are alternatives to QR codes, such as image recognition applications. These applications search for information based on photos taken by smart phones or similar devices. Some applications can be used to scan a wide range of retail products as well as codes on major landmarks and shops. Others are aimed at advertisers and allow static adverts to be brought to life with interactive audio-visual content.

Application of machine readable formats codes to gas and electricity markets

14. In April 2012, the Deputy Prime Minister announced an agreement with energy suppliers to commit to work with Government, in order to investigate the possibility of putting QR codes on energy bills and annual statements to facilitate an easier switching process through smart phones.²⁷ Together with industry, BIS led the work to consider the technical issues that would need to be resolved, such as data size limitations and consumers' data protection and security. BIS's evaluation of QR codes suggests that they can be helpful in facilitating access to data and removing data transfer friction at low cost. Although this work does not seek to mandate that suppliers place a QR code specifically on consumer's energy bills, DECC considers that the BIS evaluation is relevant to other machine readable formats.
15. The BIS work on Midata and the voluntary agreements on information and QR codes are complementary to Ofgem's Retail Market Review (RMR) measures which look to encourage and equip consumers to get the best deal from the energy market.²⁸ Ofgem's RMR measures limit the number of core tariffs suppliers can provide, prescribe simpler tariff structures and mandate suppliers to move customers on poor value "dead" tariffs to better value "open" ones.²⁹ They also require suppliers to provide personalised information on bills about the cheapest tariff with their current supplier as well as a standardised Tariff Comparison Rate (TCR) to facilitate more meaningful tariff comparisons with other suppliers.³⁰
16. In May 2013, DECC published its response to the consultation, 'Ensuring a Better Deal for Consumers',³¹ where the government set out its intention to take powers in the Energy Bill to require suppliers to place QR codes on consumers' bills, taking the BIS led work on Midata in the energy sector a step further.

²⁶ comScore (2012) 'QR Code Usage Among European Smartphone Owners Doubles Over Past Year' [web], available at: http://www.comscore.com/Insights/Press_Releases/2012/9/QR_Code_Usage_Among_European_Smartphone_Owners_Doubles_Over_Past_Year

²⁷ DECC (2012) 'Government and energy suppliers reach agreement to help consumers get best deal' [web], available at: <https://www.gov.uk/government/news/government-and-energy-suppliers-reach-agreement-to-help-consumers-get-best-deal>

²⁸ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

²⁹ A 'dead' tariff is one which is no longer available to new customers. An 'open' tariff is one which is currently available to new customers

³⁰ Ibid

³¹ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

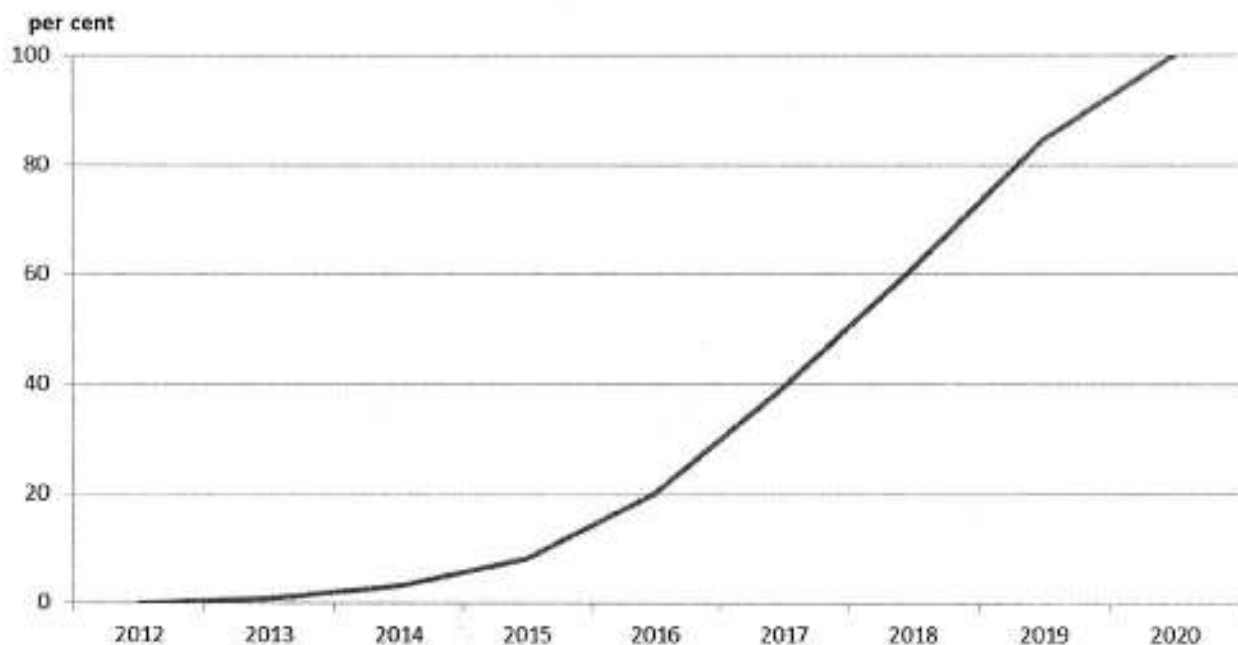
Other government initiatives to improve consumer engagement

Smart Meters

17. The Government is requiring energy companies to install smart meters for their customers and they will be rolled out as standard across the country by 2020 (please see chart 1 below for the latest Smart Meter expected rollout trajectory).³² This is consistent with the aims of this regulation in providing consumers access to their own data easily. The addition of machine readable formats to energy bills will provide all domestic energy consumers, who receive paper bills, with access to their own information until the smart meter roll out is complete. The sunset clause for this regulation is set to coincide with the completion of the roll out.
18. Once smart meters have full coverage, they will render any informational benefit from machine readable images on consumers' bills less directly useful. Domestic consumers will be able to access key data on their own energy consumption, tariff and expenditure through their smart meters. Therefore the policy is not expected to be continued after 2020. It is also therefore expected that, as the Smart Meter roll out gradually progresses between 2015 and 2020, the benefits of this policy will progressively decrease.

Chart 1: Cumulative smart meter roll-out profile - domestic consumers

UK, 2012-20



Source: DECC

EU Energy Efficiency Directive³³

19. The EU Energy Efficiency Directive includes provisions requiring energy suppliers to make billing information and consumption data available to consumers.³⁴ The addition of machine readable formats to domestic consumers' energy bills complements the Directive's provisions, which will come into force on 5th June 2014.

³² DECC (2014) 'Smart meter roll-out for the domestic and small and medium non-domestic sectors (GB): Impact Assessment [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276656/smart_meter_roll_out_for_the_domestic_and_small_and_medium_and_non_domestic_sectors.pdf

³³ The Energy Efficiency Directive came into force on 4th December 2012 and establishes a common framework of measures for the promotion of energy efficiency within the Union in order to ensure the achievement of the Union's 2020 20 % headline target on energy efficiency. For more information, see http://ec.europa.eu/energy/efficiency/eed/eed_en.htm

³⁴ See Articles 10 and 11, as well as Annex VII of the *EU Directive 2012/27/EU of 25th October 2012 on energy efficiency* [pdf], available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:315:0001:0056:EN:PDF>

Collective switching

20. Collective purchasing and switching is when consumers get together to negotiate a group deal with their gas and electricity suppliers. DECC launched the £5 million Cheaper Energy Together fund in October 2012. The fund supported the development of collective purchasing and switching schemes by local authorities or third sector organisations in England, Scotland and Wales. These events are targeted at particular groups in society, whereas machine readable formats will be on the energy bills of all consumers who receive paper bills.
21. In October 2013 DECC reported on the progress of schemes funded by Cheaper Energy Together. The schemes are considered to have been effective in engaging with consumers, with just over 21,000 household switching energy suppliers. This has delivered total savings of just over £2.7 million to date (market prices).³⁵ Since that research was published, further collective switches in November 2013 and February 2014 have resulted in additional savings of around £2.6 million (market prices) and almost 14,000 consumers switching.

Face to face advice

22. Analysis provided as part of Ofgem's Retail Market Review showed widespread consumer disengagement with energy markets, which was most pronounced amongst vulnerable consumers.³⁶ Whilst Ofgem's Retail Market Review proposals provide domestic energy consumers with simpler and fewer tariffs and clearer and better information to help them better engage with the energy market, many vulnerable consumers will need extra help and advice to engage with the energy market and to give them the confidence to take decisions that will reduce their bills.
23. For many vulnerable consumers this means the provision of face to face advice by trusted sources, such as friends and family or trusted third sector organisations. This is why DECC has provided a further £1m funding for a second year of the Big Energy Saving Network (BESN), a programme of consumer outreach led by around 500 specially trained energy advisers from voluntary organisations and community groups.³⁷ Trained volunteers have delivered advice sessions throughout winter 2013/14 to vulnerable consumers and provided training to the frontline workers who support them. The outreach programme has specifically focused on helping consumers take concrete steps to reduce their energy costs, by taking action on tariffs, switching and energy efficiency offers.
24. DECC is currently evaluating the first year's operation of this programme preceding a further grant funding round ahead of a programme of delivery through autumn and winter 2014/15.
25. The BESN complements other outreach initiatives such as Big Energy Saving Week, a national awareness raising campaign designed to connect vulnerable consumers with the range of help and advice available, and Energy Best Deal, which provides a comprehensive and broad range of energy help and advice for both consumers and advisors alike.
26. Whilst tariff and switching information is provided to vulnerable consumers through these programmes and campaigns, the need to manually input energy data from paper bills and statements of account at such public events to tariff comparison websites on portable electronic devices, makes this process time consuming, cumbersome and potentially off putting for some consumers. Machine readable formats on energy bills will make possible, through the instant access to key tariff and consumption data on a bill, the provision of fast and accurate tariff advice directed at vulnerable consumers at outreach events.

³⁵ DECC (2013) 'Helping Customers Switch: Collective Switching and Beyond' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/253862/Helping_Customers_Switch_Collective_Switching_and_Beyond_final_2.pdf

³⁶ Ofgem (2011) 'The Retail Market Review – Findings and initial proposals', pp.28-9 [web] available at: <https://www.ofgem.gov.uk/ofgem-publications/39708/mrfinal.pdf>

³⁷ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

27. Furthermore, vulnerable consumers, including those on lower incomes and those of pensionable age who live alone and/or are on lower incomes, are less likely than other groups to be computer literate and have access to computers at home.³⁸ Machine readable formats should benefit these consumers by making it easier for family and friends with greater computer accessibility/literacy to help vulnerable consumers make better informed tariff choices.

Problem under consideration

28. In a perfectly competitive market both consumers and suppliers have full information on anything that might influence their respective decision-making processes, for example supplier costs, alternative products and prices. However where a party has incomplete information, they are at a disadvantage in the market. At present, suppliers are better informed than individual consumers about their own information, particularly domestic consumers, leaving consumers at a competitive disadvantage.
29. Ofgem provided clear evidence in its RMR that the majority of domestic consumers do not engage in the energy market and are paying more than they would be if they were on a lower available tariff.³⁹ "Sticky" customers (indicated by low levels of switching) make it difficult for new energy suppliers to enter the market to attract a customer base. Ofgem's tracker survey shows just 13% of gas and electricity customers switched their supplier in 2013. While this is higher than the previous year, in which 11% of electricity customers and 12% of gas customers switched suppliers, it is still below the level seen in 2011 when 15% of electricity customers and 17% of gas customers switched.⁴⁰
30. The fact that the majority of customers do not shop around to seek out the best deals and that suppliers can differentiate their offers between new and existing customers means there is less pressure on suppliers to compete (see Box 1) than in a perfectly competitive market. This makes market entry by new suppliers difficult, potentially resulting in higher prices for the majority of consumers that do not engage.

Box 1: Impact of consumer disengagement on competition

Consumers play a key role in a well-functioning market. Through their active participation and choices in the market, consumers put pressure on suppliers to offer the products that consumers want at competitive prices. However, in theory 'sticky' customers can create for suppliers a degree of slack and reduce the incentive to drive down costs and to innovate to meet consumers' preferences. This can potentially lead to higher prices for consumers. In order to be active, consumers need to have a clear understanding of how to access, assess and act on market information to choose the best product and tariff.

In general, when suppliers make excess profits or act inefficiently, this should incentivise new entrants into a market. However, consumer disengagement puts new entrants to the retail market at a potential disadvantage. Any new entrant has to offer larger discounts to incentivise consumers to switch than they would have to if the market featured a more engaged and reactive consumer base. Unlike incumbents, by definition new entrants have no sticky customers that were inherited at the time of market liberalisation. Instead, they have had to compete to gain all their customers, meaning that all of their customers were at one point (and possibly still are) active in the market. The customers of new entrants are more likely to switch than those of incumbents, and therefore new entrants cannot segment their customers in the way incumbent suppliers can.

This market structure enables the incumbents to offer more competitive tariffs to those who do switch whilst keeping the tariffs of sticky customers higher. The fact the large incumbent suppliers are able to undercut new entrants due to their more profitable large 'sticky' customer base makes new entry difficult. This potentially increases the incumbents' market power.

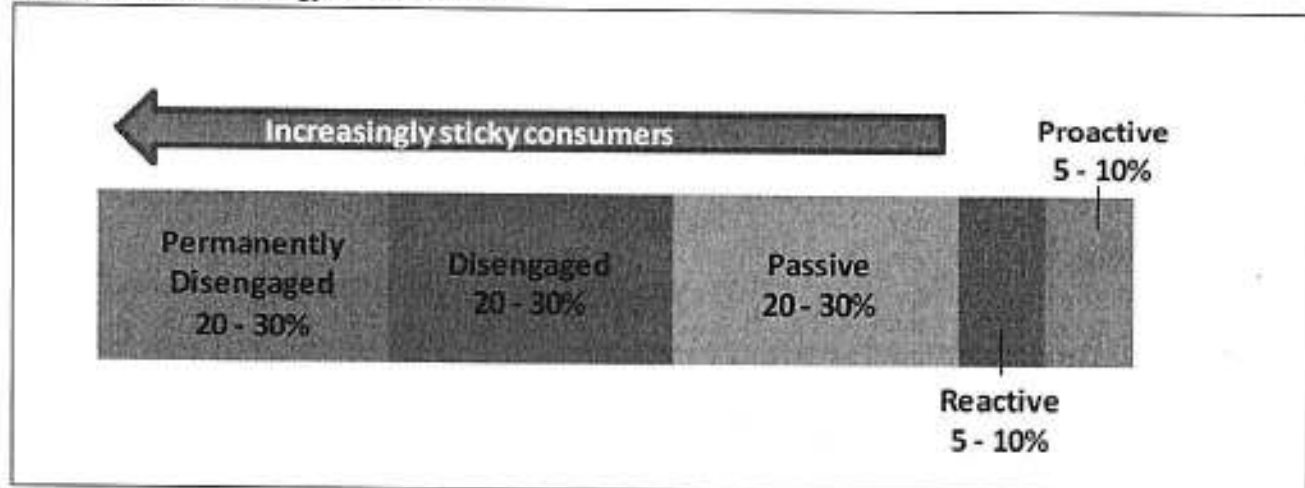
³⁸ See Ofcom (2014) 'Adults' Media Use and Attitudes report 2014', p.14 [pdf], available at: http://stakeholders.ofcom.gov.uk/binaries/research/media-literacy/adults-2014/2014_Adults_report.pdf. Only 42% of over 65's use the internet at all, compared to 83% of all adults.

³⁹ Ofgem (2011) 'The Retail Market Review – Findings and Initial Proposals: Supplementary appendices' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39709/rmrappendices.pdf>

⁴⁰ Ipsos MORI (2013) 'Consumer Engagement with the Energy Market – Tracking Survey 2014', p.10 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/88375/customerengagementwiththeenergymarket-tracking-survey-2014-final-published-2662014.pdf>

31. However, Ofgem's RMR measures aim to introduce a fairer and more transparent tariff framework and to make it more difficult for suppliers to subsidise cheap deals through "sticky customers".⁴¹
32. In their 2011 'The Retail Market Review – Findings and Initial Proposals' document, Ofgem segmented energy consumers into five categories.⁴²

Figure 1: Ofgem's segmentation of energy consumers, in terms of their attitudes and behaviour towards engaging with the energy retail market



These segments can be defined as follows:

33. *Proactive consumers*: are likely to have switched supplier or tariff within the last year. They research alternative offers themselves and will switch supplier without the need for prompting.
34. *Reactive consumers*: are also likely to have switched supplier or tariff within the last year. They do not necessarily shop around or plan to switch, but may switch as a result of an encounter with a sales agent.
35. *Passive consumers*: are those who report switching at some time in the past, but have not in the last year. Our research tells us that many of these consumers have switched once, most often to a dual fuel offering either with British Gas or their incumbent electricity supplier. Having made an initial saving with their first switch they are not particularly likely to switch again.
36. *Disengaged consumers*: are those customers who report never having switched but don't rule out switching in the future. Many disengaged consumers may only decide to switch in reaction to poor service from their supplier or following an encounter with a sales agent. They generally have little knowledge (and in some cases little interest) of the energy market.
37. *Permanently disengaged consumers*: those consumers that claim to have never switched and are unlikely to switch in the future. They are the stickiest consumers and many are likely to be vulnerable consumers.

⁴¹ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

⁴² Ofgem (2011) 'The Retail Market Review – Findings and Initial Proposals: Supplementary appendices', pp.5-6 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39709/rmrappendices.pdf>

38. Ofgem concluded that the reasons for lack of consumer engagement in the retail energy market (see Box 2) include the proliferation of tariffs and complex tariff structures which make it difficult for consumers to compare tariffs and understand which offer the best value for them, and the lack of clear information on bills. Another factor is a lack of awareness that cheaper tariffs exist.⁴³ Many consumers are not confident enough to engage in the market and/or are put off by the perceived hassle and time it takes to switch supplier. Others may be aware that there are savings to be made but in the absence of a specific prompt or trigger to act, choose to remain with the tariff they are already on.⁴⁴ Two further barriers are a lack of confidence amongst consumers in collating accurate tariff and usage information; and a lack of confidence in understanding and predicting energy usage.⁴⁵

Box 2: Barriers to effective consumer engagement

Ofgem has carried out consumer research and analysis to assess the barriers to consumer engagement which they have presented its March 2013 RMR document, 'The Retail Market Review – Final domestic proposals'.⁴⁶ The barriers to engagement that Ofgem identified are:

- *Complex tariffs* – the number of different tariff structures on offer are confusing, with complex structures, including multi-tier tariffs and various discounts applied. This puts off many consumers from searching, leads some consumers to abandon their search, may result in an increased frequency of poor switching decision and contributes to a lack of trust in the industry.
- *Inadequate information* – there is evidence to suggest that consumers find information that they are sent from suppliers difficult to understand and use, particularly for vulnerable customers.
- *Lack of trust and poor supplier conduct* – there is evidence that the overall perception of the energy industry is fairly negative, and suggests that consumers believe suppliers make it deliberately difficult to switch supplier.

Behavioural economics also suggests that consumers have:⁴⁷

- *Limited capacity to assess complex information when switching* – time and attention are scarce resources and so individuals use rules of thumb when the information they need to assess is complex, this often results in non-optimal decisions.
- *'Status quo bias'* – consumers have a tendency to not change from what they are currently doing unless they face strong reasons to do so.
- *Loss aversion* – consumers feel more strongly about losing rather than gaining value, and therefore could be less likely to switch for fear they may be worse off.
- *High discount rate* – consumers put more weight on the costs/hassle of switching than the gains they could achieve over a longer time period by switching.

⁴³ SPA Future Thinking (2012) *Options for cheapest tariff messaging on customer communications: Report of qualitative research* [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39450/options-cheapest-tariff-messaging-customer-communications.pdf>

⁴⁴ Ibid

⁴⁵ BIS (2014) 'Feasibility study on the use of QR codes in the energy sector', p.7 [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276198/bis-14-519-midata-programme-feasibility-study-on-use-of-qr-codes-in-energy-sector.pdf

⁴⁶ Ofgem (2013) 'The Retail Market Review - Final domestic proposals' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39350/retail-market-review-final-domestic-proposals.pdf>

⁴⁷ Ofgem (2011) 'What can behavioural economics say about GB energy consumers' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39711/behaviouraleconomicsgbenergy.pdf>

39. In October Ofgem introduced new licence conditions to implement its RMR measures which are intended to overcome the barriers it identified during the course of the review. These include:⁴⁸
- limiting suppliers to four tariffs per fuel;
 - banning complex tariffs;
 - standardising the discounts and special offers;
 - requiring suppliers to notify consumers when a fixed term tariff is coming to an end; and
 - requiring suppliers to tell their customers about the cheapest tariff available for them and provide clearer information so that they can compare their tariff to those offered by other suppliers.
40. Research from Ofgem's March 2012 Consumer First Panel shows that not all consumers are aware that they require a range of data to help them review their energy options, including the cost and features of their current tariff, their consumption and details of alternative tariffs which will inform whether a switch would be beneficial.⁴⁹ It highlights lack of information about the consumer's current tariff as a barrier and concludes that consumers need to have access to clear information that enables them to make accurate decisions about their energy options at each stage of this 'customer journey'.
41. Feedback from outreach events has tended to support this finding. Whilst organisers (e.g. Citizens Advice) were able to engage with consumers on the range of energy help and advice available to them, the degree to which they were able to offer advice on tariff and switching options was constrained by a range of factors, including uncertainty as to the best tariff options suitable for each consumer's circumstances. This was in part due to a lack of basic information about their existing tariff, payment method and consumption. Although RMR reforms will require suppliers to provide key information in a tariff label on bills and other communications,⁵⁰ machine readable formats on bills codes will make it more accessible and portable.
42. The voluntary progress made by the Midata initiative in the energy sector so far does not provide consumers with access to their own data unless their energy is supplied by one of the largest six energy suppliers and they either have an online account or elect to receive the data via email. The proposed Secondary Legislation, relating only to paper bills, will better target disengaged consumers who are less likely to be computer literate and therefore less able to receive information via the internet.

Rationale for Intervention

43. Intervention is needed to ensure that energy companies provide consumers with their data in a non-proprietary machine readable format. This would make the data readable and portable through a generic scanning application, such as a QR code reader. By improving accessibility of information consumers can participate more effectively in the market. If successful, consumers will be in a better position to choose the best products and tariffs for them

⁴⁸ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

⁴⁹ Ipsos MORI (2012) 'Consumer engagement with the energy market, information needs and perceptions of Ofgem - Findings from the Ofgem Consumer First Panel Year 4: second workshops (held in March 2012)' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39452/consumer-engagement-energy-market-information-needs-and-perceptions-ofgem.pdf>

⁵⁰ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

44. Furthermore, third party intermediaries have indicated that they would be highly likely to develop applications to read and utilise the machine readable format. This would allow quicker and easier tariff comparisons both within and between suppliers, facilitating increased levels of switching. In addition, such application development should facilitate quicker integration of machine readable formats in the market, meaning the associated benefits will be realised more quickly than they otherwise would be.
45. BIS have made progress with the Midata project and have an order-making power to require suppliers in the energy, banking (current accounts and credit cards) and mobile phone sectors to provide access to consumers own transaction data in a portable electronic format. This power also extends to requiring the provision of such data to Third Party Intermediaries, such as switching companies. BIS are currently assessing whether there has been sufficient voluntary progress to obviate the need to exercise these powers.
46. The voluntary progress made by the Midata initiative in the energy sector so far does not provide consumers with access to their own data unless they have they have an online account or the ability to receive the information via email. This legislation, relating only to paper bills, will better target the problem of disengagement as those consumers without online accounts are more likely to be disengaged and represent around 85% of the population of energy consumers.⁵¹
47. However, it is not clear that there will be sufficient incentives for suppliers to work voluntarily with Government to develop this technology in a way which could enable cross market comparisons and make switching to an alternative supplier easier and more effective. As mentioned in paragraph 14 above, BIS has recently led work, alongside industry, to consider the technical issues involved in putting QR codes or similar on energy bills and annual statements. Despite the conclusion of this work – that QR codes can be helpful in facilitating frictionless access to data at low cost – there has been no progress towards a voluntary agreement to introduce QR codes or similar onto energy bills.
48. The Midata programme's independent Chair, Professor Nigel Shadbolt has advised that "for individuals the costs of gathering and processing their own personal data for their own purposes are currently so high that few do so".⁵² In his view working solely through the voluntary programme is unlikely to change that in a way that results in a mass-scale, permission and trust based sharing of electronic data, which he believes, will be an essential cornerstone for an efficient, innovative 21st century economy able to compete effectively on the future global stage.
49. The Government intends to support the BIS led voluntary work through the introduction of legislation. This is expected to increase the likelihood and timeliness of the potential benefits from using QR codes, or similar, enabling cross market tariff comparisons and easier switching. This is complementary to the recently implemented licence changes following Ofgem's RMR and the current review of TPIs.

Policy Objective

50. The Government's objective is to take appropriate action to ensure that almost all⁵³ domestic retail energy consumers (i.e. not just customers of the largest six energy suppliers who can receive data electronically) benefit from access to key data on their own energy consumption, tariff and expenditure in a form which is clear, easy to understand and facilitates frictionless data transfer.

⁵¹ Source: DECC (2014) Quarterly Energy Prices (QEP) publications, tables 2.4.2, 2.4.3 and 2.5.2. The incidence of online tariffs in December 2013 was around 15% for standard electricity and gas, and around 16% for Economy 7 electricity. Available at: <https://www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-price-statics>

⁵² BIS and Cabinet Office (2012) 'Impact assessment for Midata', p. 9 [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32689/12-944-midata-impact-assessment.pdf

⁵³ As discussed in the 'Small and micro business assessment' section below, 12 energy suppliers will be covered by the exemption the Government is proposing for this policy. This includes the 10 energy suppliers which are currently small or micro businesses.

51. Data provided in this format will help overcome an informational barrier to consumer engagement, bringing about additional benefits to those from Ofgem's implementation of its RMR proposals.⁵⁴
52. Third sector volunteers, providing vulnerable consumers with 'assisted action' through the Big Energy Saving Network and other third sector led outreach events, will also be able to make use of the machine readable information to encourage switching.⁵⁵
53. Furthermore, machine readable formats will allow TPIs to develop services and products which help consumers, by frictionlessly uploading and analysing their data – providing tailored cross-market tariff comparisons. As a result, domestic consumers will be privy to quicker, easier tariff comparisons which should lead to increased switching within and between suppliers. In turn, this should increase competitive pressure in the retail energy market, thereby making it operate more effectively in the interests of consumers.

Options Considered

54. This section examines the costs and benefits of implementing the Primary Legislation powers in order to require energy suppliers to provide access to key tariff and usage information, on energy bills and statements of account, to domestic customers in a form that allows smart phones, or similar devices, to read and use the information.
55. Only one policy option is considered in this IA because the primary powers which exist in the Energy Act are narrowly defined and are intended to complement other regulatory and non-regulatory measures to increase consumer engagement in the energy market. The Act unambiguously gives the government powers to require suppliers to place machine readable formats on energy bills.⁵⁶

Baseline / 'do nothing' option

56. In order to analyse the impacts of implementing the powers, the policy option has been assessed against a "business as usual" baseline scenario. In this business as usual case, secondary legislation to implement the requirement is not brought forward.
57. The largest 6 energy suppliers now provide their customers with data in an electronic, machine-readable format. Currently, this is in the form of a comma-separated values (.csv) file.⁵⁷ On its own, we believe the voluntary programme will not deliver any further additional costs or benefits to those already in place.
58. The Government may additionally seek to exercise the powers of the Enterprise and Regulatory Reform Act in order to compel energy suppliers to release customers' personal data to them. As discussed above, the government will also still conduct a series of assisted action events, designed to target the severely disengaged. This is aimed to improve engagement amongst these more vulnerable groups who may not have direct personal access to smartphone technologies.
59. According to official statistics, in Q3 2008 switching levels for both electricity and gas peaked, at around 1.5m and 1.1m switches respectively. This means that approximately 5% of both gas and electricity customers switched suppliers in that quarter.⁵⁸ On an annual basis switching rates have been declining since then – just 3.4m electricity and 2.3m gas switches occurred in 2013, compared to 5.4m and 4.2m in 2008. However there was a significant surge in switching levels during Q4 2013,

⁵⁴ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

⁵⁵ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

⁵⁶ See section 139 of the *Energy Act 2013*, available at: <http://www.legislation.gov.uk/ukpga/2013/32/section/139/enacted>.

⁵⁷ A .csv file format consists of a number of records of information, each of which is split into a number of fields which are separated by delimiters. This delimiter is usually a comma, but could also be a semi-colon or a tab.

⁵⁸ These estimates are only approximate because DECC's switching data counts the total number of switches, rather than the number of customers who switched. If any customers switch more than once in a quarter, these estimates will tend to overstate the switching rate. See QEP 2.7.1, available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/323018/qep_271.xls

with 1.3m electricity switches and 1.0m gas switches. This means that approximately 5% of both electricity and gas customers switched suppliers in Q4 2013. The switching rate fell back to normal levels in Q1 2014, with around 3% of electricity customers and 2% of gas customers switching suppliers. Industry data shows a gentle decline in the switching rate during Q2 2014.⁵⁹

60. In our baseline scenario we assume that, in the absence of secondary legislation on machine readable formats, the switching rate will increase due to Ofgem's new domestic supply licence conditions resulting from its implementation of RMR. However, due to the scale of the retail energy market and the wide scope of disengagement, we would not expect the potential switching gains to be exhausted by the new licence conditions. Machine readable formats are expected to bring about benefits over and above those brought about by the RMR.

Option 1

61. This option is to oblige suppliers to place, on all domestic retail consumers' paper energy bills, a non-proprietary machine readable format which if scanned by a generic smartphone reader would provide access to 12 key pieces of data in a manner which is clear and easy to understand. The machine readable image will have to be of an agreed format and must be on either the front or back of the first page of the bill.
62. As outlined in the 'Small and micro business assessment' section below, energy suppliers with fewer than 50,000 customers for a given fuel will be exempt from the policy with regards to bills and statements of account relating to that fuel. This means that the smallest 12 existing energy suppliers will be exempt from the policy. This includes the 10 energy suppliers which are currently believed to be small or micro businesses.⁶⁰

Type of machine readable format

63. Whilst QR code use is an established technology and its use is growing, we have acknowledged throughout this process that this is a technology that is at risk of short-term obsolescence from richer image recognition and near field communication applications. When drafting the primary power therefore, we allowed a degree of solution flexibility (see figure 2 below for an overview of different types of machine readable format as well as competing technologies).
64. This view was echoed by some energy suppliers and a number of technology companies and consultants which responded to DECC's consultation, with some respondents also advocating that the term 'machine readable formats' should specifically include optical character recognition (OCR). Using this technology, the required data can be read from the text on a bill and not necessarily embedded in an image, such as a QR code. Leading these calls have been technology companies who have developed OCR technology and were close to coming to the market with their products before DECC published its recent consultation.
65. These calls were balanced by some application developers and Third Party Intermediaries who stated that consumer engagement and recognition would be better aided, and the costs of developing, testing and maintaining applications that utilise machine readable formats could be reduced, by mandating one specific format.
66. In appreciation of these conflicting concerns, DECC intends to proceed with draft Licence Conditions that require functionality consistent with, but not limited to QR codes. OCR could therefore be a compliant means of implementing the Licence Condition, but only if the data was presented to the customer in the same way and same place on bills/statements of account as other formats.
67. This 'consistent functionality' will be realised through specifying a number of attributes which the machine readable image, or OCR, must exhibit. The data will need to:




1. be embedded in a machine readable image;

⁵⁹ Energy UK (2014) 'Energy Switching – June 2014', p.2 [pdf], available at: <http://www.energy-uk.org.uk/publication/finish/5-research-and-reports/1134-electricity-switching-figures-june-2014.html>

⁶⁰ We do not have sufficient data on employee headcount to determine perfectly which of the smaller independent suppliers classify as small and micro businesses under the Better Regulation definition (having less than or equal to 49 full-time employees). For those suppliers where data is not available, we have estimated employee headcount on the assumption that it is proportional to the number of customer accounts a supplier has.

2. be grouped together in the same place on a bill/ statement of account;
 3. contain the 12 data items we specified within the image;
 4. be readable by generic smartphone/ tablet reader applications;
 5. be portable from a generic application – i.e. copy and paste-able and in particular up-loadable into an application;
 6. not be constrained by passwords or other access barriers;
 7. have standard formatting and delimiters; and
 8. conform to industry accepted standards of readability – i.e. for QR codes to be of an agreed size to optimise readability.
68. Given the potential for constraining innovation, we should also provide a further commitment to review implementation in 3 years.

Figure 2: Summary of main machine readable formats and competing technologies which could be compliant with the proposed requirements

Technology	Description	Example Image	Data storage capacity						
Quick-Response (QR) Code	A QR code is a form of matrix barcode consisting of black squares arranged on a white background		Up to 1852 characters						
Universal Product Code (UPC)	A UPC-A barcode consists of a scannable strip of black bars and white spaces, above a sequence of 12 numerical digits		12 numerical digits						
Image recognition	A query image is compared to a large database of reference images - quite similar like text search you know from search engines on the web. Upon identifying the reference image, information associated with it is returned.		None - The reference image itself does not contain any kind of code						
Optical character recognition	Printed text is scanned by a compatible smartphone or similar device, which is converted into machine-readable data on the device.	<table border="1" data-bbox="722 1608 1134 1727"> <tbody> <tr> <td>Data item 1</td> <td>value</td> </tr> <tr> <td>Data item 2</td> <td>value</td> </tr> <tr> <td>Data item 3</td> <td>value</td> </tr> </tbody> </table>	Data item 1	value	Data item 2	value	Data item 3	value	None - The printed text itself does not contain any kind of code
Data item 1	value								
Data item 2	value								
Data item 3	value								

Content of machine readable format

69. As part of the Midata project, a working group was set up to consider the feasibility of using QR codes in the retail energy sector. The working group was made up of government departments, industry, the regulator, consumer groups and third party intermediaries. The working group agreed that 12 items of data (listed below) should be accessible via the machine readable image:
1. Version number;
 2. Post Code;
 3. Current provider;
 4. Current electricity tariff;
 5. Current gas tariff;
 6. Current electricity payment method;
 7. Current gas payment method;
 8. Meter Point Administration Number (MPAN);
 9. Meter Point Reference Number (MPRN);
 10. Electricity usage over twelve months to bill/statement date;
 11. Gas usage over twelve months to bill/statement date; and
 12. Start date.
70. Consultation respondents broadly agreed that these 12 data items were appropriate in order to realise the Government's proposed objectives around consumer engagement.
71. In addition, the working group also recommended that the machine readable image be a minimum size of 2cm x 2cm in order to reduce the risk that lower quality cameras will be unable to read the format
72. This policy option requires the data to be clear and easy to understand when the consumer uses a smart phone, or similar device, to read the machine readable format. At a minimum, the data must be clearly visible and accompanied by relevant definitions and descriptions. Data in a continuous text string would not be compliant with the legislation. Beyond this, suppliers have scope for innovation in how they ensure compliance with this policy.
73. One of the benefits of this policy will be to better facilitate engagement, including by vulnerable consumers at outreach events or by friends and family. The use of QR codes or similar at such events would require consumers to bring along a copy of their bill to be scanned by a trusted third sector representative. To increase the likelihood that customers bring the data and image to such an event it has also been decided that the machine readable image must be presented on either the front or the back of the first page of the bill.
74. Furthermore, to ensure that consumers can genuinely utilise the power of their own data, and facilitate the development of applications which utilise this data, non-proprietary software must be used in the development of the machine readable format so that any existing machine that is built to read images, i.e. a "vanilla" reader, can do so.

Impacts of Policy Options

Monetised Costs of Option 1⁶¹

Transition costs

75. Under this option, suppliers will incur one off set up costs. These will include acquiring software to produce the machine readable image, redesigning the bill and changing the bill generation and printing processes.⁶²
76. Free, open source software is readily available to generate QR codes, which are fit for the purpose of holding 12 pieces of information that can be read by a "vanilla" reader. Open source software is also freely available to generate alternative machine readable formats, such as UPC barcodes. Therefore, it is estimated that there will be no software costs to energy suppliers.
77. In the consultation stage IA, we estimated the one-off set up costs to suppliers by making some indicative assumptions about the human resources necessary to complete the tasks outlined in paragraph 75 above. On the basis of these assumptions, we estimated the costs to be £0.11m in total (2013 prices).⁶³
78. For this IA, in order to estimate the one-off costs to energy suppliers of redesigning the bill and changing the bill generation and printing processes, we have instead utilised data from consultation responses.
79. We intend to publish responses to the Government's Consultation⁶⁴ alongside the final IA and draft Licence conditions. Responses to this consultation indicated that the largest six energy suppliers, in terms of customer numbers, are expected to face one-off costs of between £0.15m and £0.5m (2014 prices) in complying with the proposed legislation. These set-up costs are expected to be £1.8m (2014 prices) in total for the largest six suppliers.
80. Whilst in our original IA we estimated implementation costs for businesses to be relatively low, DECC asked as part of the recently concluded consultation for more information on the cost impacts on all suppliers, including on the 19 currently licensed independent smaller suppliers. Many who responded to the consultation maintained that these costs would disproportionately impact on their businesses, although only one response contained a monetised estimate of these set-up costs.
81. Based on the information we did receive, transition costs are likely to fall most heavily on the smallest energy suppliers, who have fewer customer accounts over which to spread these costs compared to larger suppliers. To mitigate this, as discussed in the 'Small and micro business' section below, the smallest 12 energy suppliers will be exempt from this policy. This includes the 10 energy suppliers which are currently believed to be small or micro businesses.⁶⁵ In total, the one-off costs to the remaining 7 non-exempt suppliers outside of the largest six, are expected to be around £1.5m (2014 prices) in total. DECC recognises that this is much larger than their market share – these 7 suppliers are expected to bear around 45% of the transition costs yet represent only around 5% of the market.

⁶¹ As discussed in the 'Small and micro business assessment' section below, the smallest 12 energy suppliers will be covered by the exemption the Government is proposing for this policy. This includes the 10 energy suppliers which are currently small or micro businesses. The costs presented in the following section reflect this exemption.

⁶² BIS (2014) 'Feasibility study on the use of QR codes in the energy sector', p.16 [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276198/bis-14-519-midata-programme-feasibility-study-on-use-of-qr-codes-in-energy-sector.pdf

⁶³ See pp.17-18 of the consultation stage IA, available online at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/287905/QR_IMPACT_ASSESSMENT_UPDATE_D_-_INS.pdf

⁶⁴ The original Consultation document is available online at: <https://www.gov.uk/government/consultations/a-consultation-on-proposals-to-amend-domestic-energy-supply-licence-conditions-requiring-provision-of-key-energy-data-in-a-machine-readable-format>

⁶⁵ We do not have sufficient data on employee headcount to determine perfectly which of the smaller independent suppliers classify as small and micro businesses under the Better Regulation definition (having less than or equal to 49 full-time employees). For those suppliers where data is not available, we have estimated employee headcount on the assumption that it is proportional to the number of customer accounts a supplier has.

82. However it should be noted, as discussed in paragraph 119 below, that some consultation respondents argued that smaller suppliers are likely to be amongst the major beneficiaries of the increased consumer engagement and switching rates which are expected to result from this policy. Recent industry data on energy supplier switching provides some evidence to support this argument, with switches to smaller suppliers representing a rapidly increasing proportion of total switches over the last two years. In August 2012 this proportion was 9%; by June 2014 it is estimated to have grown to 49%.⁶⁶ Furthermore, the exempted energy suppliers may choose to comply with the policy voluntarily if they judge that the benefits to them outweigh the costs.
83. The total transition costs of this policy are expected to be around £3.4m (2014 prices).⁶⁷ This is significantly higher than the figure of £0.11m (2013 prices) presented in the consultation stage IA. The underestimation of one-off set up costs in the consultation stage IA reflects the lack of evidence which was available at the time. We consider the estimates presented in this IA to be more accurate as they are based on data received from suppliers who responded to the consultation.
84. We have not been able to estimate a range for these set-up costs so have only calculated a point estimate. However, due to the particular lack of evidence received on the costs of implementation for smaller independent supplies, DECC has taken a conservative view in estimating these costs for the final IA. These costs should be considered an upper bound for the costs which non-exempt suppliers (outside of the largest 6) may incur as a result of this policy.

Recurring costs

85. Suppliers will also face on-going costs of printing the machine readable images on consumers' bills. As the working group noted,⁶⁸ the printing costs for a QR code is simply the cost of ink. Suppliers are assumed to minimise costs by printing any machine readable image in black and white. These costs will only be incurred by the proportion of consumers who receive paper billing as the legislation only requires suppliers to apply the machine readable format to paper bills. The costs of ink are based on a U.S. industry report on printing costs.⁶⁹ This cost of printing a QR code has been estimated to be 0.3 pence per bill, while the cost of an alternative machine readable format has been estimated to 0.5 pence per bill.⁷⁰ Please see table 1 below for a breakdown of how this estimate is constructed:

Table 1: Cost of printing machine readable image, per bill/statement of account (2014 prices)

	Cost of Ink per page	Ink coverage of bill/statement of account ⁷¹ (A)	Ink coverage including image (B)	Increase in ink coverage: QR code ⁷² (B/A - 1)	Cost of printing image ⁷³
QR code	3.95p	5%	5.3%	6.4%	0.25p
Alternative image	3.95p	5%	5.3%	12.8%	0.51p

⁶⁶ Energy UK (2014) 'Energy Switching – June 2014', p.2 [pdf], available at: <http://www.energy-uk.org.uk/publication/finish/5-research-and-reports/1134-electricity-switching-figures-june-2014.html>

⁶⁷ £1.8m + £1.9m = £3.7m.

⁶⁸ BIS (2014) 'Feasibility study on the use of QR codes in the energy sector', p.16 [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276198/bis-14-519-midata-programme-feasibility-study-on-use-of-qr-codes-in-energy-sector.pdf

⁶⁹ http://www.qualitylogic.com/tuneup/uploads/docfiles/QualityLogic-Cost-of-Ink-Per-Page-Analysis_US_1-Jun-2012.pdf

⁷⁰ These figures are consistent with internal estimates of DECC's printing costs

⁷¹ Using internationally recognised ISO/IEC 19798:2007 printing standard. See:

http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=50015.

⁷² These figures assume a 2x2cm image is printed, consisting of 50% black ink in the case of a QR code and 100% black ink in the case of an alternative image, which serves as an upper bound for the ink coverage.

⁷³ 6.4% x 3.95p = 0.25p and 12.8% x 3.95p = 0.51p.

86. Across all non-exempt suppliers, these printing costs amount to around £164,000 per year for a generic QR code and £328,000 per year for an alternative format (2014 prices). The difference between the upper and lower printing cost estimates is driven by the relatively low ink costs of a QR code. These costs have been calculated on the basis that QR codes, which are characterised by black squares on white background, will require half as much ink as an alternative format. The central estimate of the printing costs is calculated as a simple average of the upper and lower estimates, giving a figure of around £246,000 per year (2014 prices). See table 2 below for a breakdown of these printing cost estimates.

Table 2: Printing cost calculations (2014 prices)⁷⁴

Supplier group	Number of non-online customers (millions)	Number of paper bills/statements of account issued ⁷⁵ (millions) (N)	Cost of printing image – low (C _{low})	Cost of printing image – high (C _{high})	Total printing costs – low (NxC _{low})	Total printing costs – high (NxC _{high})
Largest 6 suppliers	26.9	61.4	0.25p	0.51p	£156,000	£311,000
Next 7 biggest suppliers (smallest 12 exempt)	1.4	3.3	0.25p	0.51p	£8,000	£17,000
Total	28.3	64.7	0.25p	0.51p	£164,000	£328,000

87. Of these costs, between £8,000 and £17,000 per year (2014 prices) are expected to fall on non-exempt suppliers outside of the largest six, with a central estimate of around £12,000. This is proportionate to their market share of around 5%.

88. There are no direct monetised costs to consumers under Option 1. However, if suppliers pass the costs of this policy onto consumers, they will face an indirect cost.

89. Evaluated over a five year period from 2015 to 2019, after which time the smart meter rollout is expected to reach scale and the policy will come to an end, the PV of the costs of policy option 1 is estimated to be in the range £6.8m – £7.5m (2014 prices, present value base year 2014). The central estimate of £7.2m is calculated as a simple average of the two. Please see table 4 below for a breakdown of these estimates.

Close-down costs

90. As outlined in paragraph 89 above, the policy will come to an end in 2019. It is therefore expected that suppliers will face further one-off costs associated with redesigning the bill and changing the bill generation and printing processes such that machine readable images are no longer generated and printed.

91. However, it should be noted that no respondent to the recently concluded Government consultation on this proposal raised this issue. Therefore, Government considers it highly likely that these costs may turn out to be lower than presented in this IA.

92. As a conservative estimate, we have assumed that these close-down costs will be equal to the set-up costs (in real terms). In practice this is likely to be an overestimate as, although bill designs and billing systems may have to be reset and reprogrammed, no new processes will have to be developed, tested and incorporated into existing systems as they will during set up. As discussed in the 'Monetised Costs of Option' section above, these are expected to be £3.4m (2014 prices).

⁷⁴ Figures may not sum due to rounding.

⁷⁵ Information on the billing frequencies used by suppliers was gathered from their own websites. For some of the smaller suppliers, where information was not obtainable, we have assumed they use billing frequencies typical of the industry as a whole. It should also be noted that these calculations assume that all suppliers are compliant with the EED provisions which come into force in June 2014 (see paragraph 19 above for more details). The EED requires that all customers receive a bill or statement of account at least twice yearly. The implementation of the EED's requirements in relation to billing has been the subject of a previous IA, which received a Green rating from the RPC. That IA will be published in the near future, alongside the Government response to the consultation on the EED's billing requirements.

Non-Monetised Costs of Option 1

Indirect costs due to increased levels of switching

93. Volunteers working as part of the DECC funded Big Energy Saving Network and other third sector led outreach events, targeting vulnerable consumers with a programme of 'assisted action', will be able to make use of the machine readable images to encourage switching.⁷⁶ Easier access to the information required to compare tariffs and switch supplier can also be expected to increase levels of switching, compared to the baseline scenario, amongst the wider population (those not targeted by outreach events).
94. Furthermore, it is expected that third parties, for example switching sites, will develop applications to utilise the data embedded in the machine readable formats in order to offer consumers tailored cross-market tariff comparisons.⁷⁷ DECC considers it highly likely that third parties, for example switching websites, will develop these applications.
95. To the extent that these aforementioned groups of consumers realise savings through increased levels of switching, compared to the baseline scenario, economic surplus will be reallocated from suppliers to consumers, representing an indirect cost for energy suppliers. These costs count as indirect because any switching which occurs as a result of placing machine readable formats on energy bills is contingent further action by consumers. Therefore any change in the switching rate resulting from this policy is a second-round effect.
96. It has not been possible to monetise these categories of cost due to uncertainty about:
- the degree to which the machine readable images and possible third party applications will bring about additional switching, on top of the level which would be expected in the baseline scenario
 - the likelihood of third parties, for example switching sites, developing applications to utilise the machine readable formats

Opportunity cost of space on bills and statements of account

97. At the Midata Programme Industry forum, where a range of energy suppliers had representation, no concerns about the opportunity cost of space on consumers' bills were raised. Therefore, in the consultation stage IA we assumed the opportunity costs to suppliers of the space on the bill used to contain the machine readable format are expected to be zero.
98. However, some respondents to the recently concluded consultation on the proposed secondary legislation were concerned that there may be an opportunity cost in terms of space on bills/statements of account which could otherwise be used for commercial purposes such as displaying marketing messages. Despite this, there was no evidential basis presented which would have allowed a monetised estimation of these costs.

⁷⁶ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

⁷⁷ BIS (2014) 'Feasibility study on the use of QR codes in the energy sector', p.17 [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276198/bis-14-519-midata-programme-feasibility-study-on-use-of-qr-codes-in-energy-sector.pdf

Summary tables – cost impacts of options 1

Table 3: Costs under Options 1 (£m, 2014 prices)

		Low	High	Central
One-off set-up costs	Bill redesign and amending bill/statement generation and printing process	3.35	3.35	3.35
Recurring annual costs	Costs of printing	0.16	0.33	0.25
One-off close-down costs	Resetting bill/statement generation and printing process to original format	3.35	3.35	3.35

Table 4: Present value of costs under Option 1 over the appraisal period: 2014-19 (£m 2014, present value base year 2014)⁷⁸

		Low	High	Central
Option 1	One-off costs	3.24	3.24	3.24
	Sum of recurring annual printing costs	0.74	1.48	1.11
	One-off close-down costs	2.82	2.82	2.82
	TOTAL	6.80	7.54	7.17

Monetised Benefits of Option 1

99. It has not been possible to monetise the benefits of option one due to lack of evidence and the level of uncertainty around the exact impacts of the policy. See the 'Non-Monetised Benefits' section which follows for further explanation.

Non – Monetised Benefits of Option 1

100. It is considered that the introduction of machine readable formats on energy bills will change the behaviour of two main groups of customers: vulnerable consumers who are targeted by assisted action events and are considered to fall into the disengaged and permanently disengaged (see description of vulnerable consumers below) and passive consumers who are not targeted by assisted action events.

101. It is considered that the most engaged consumers, proactive and reactive consumers, are most likely to have electronic billing and so will not receive a machine readable format on their energy bills.

Direct benefits of improved access to information

102. As a result of implementing this policy, passive consumers will benefit from access to key data on their own energy consumption, tariff and expenditure in a form which is clear and easy to understand. The improved availability of this information may increase consumer engagement in the retail energy market by breaching a key informational barrier to consumer engagement in the retail energy market. Specifically, it will allow consumers to better understand and predict their energy usage.

⁷⁸ The central estimates are calculated as the arithmetic mean of the low and high estimates. Figures may not sum due to rounding.

103. Disengaged and permanently disengaged consumers will also have access to their own data, but given the definition of these groups it is considered that they will need support, for example from an outreach event, in order to gain benefit from the machine readable format on their energy bills.

Indirect benefits to vulnerable consumers via 'assisted action' events

104. In the Government's response to DECC's discussion document, "Ensuring a Better Deal for Consumers", published in May 2013, a commitment to fund the creation of the "Big Energy Savings Network" was announced.⁷⁹ Since then DECC has committed a further £1m to fund a second year of this programme into 2014/15. Events run as part of this programme are designed to support vulnerable consumers to engage in the energy market. In looking to improve the success of this programme further, DECC will look to place particular emphasis on grant funded outreach conducted by community and third sector organisations. Government considers these organisations best able to provide vulnerable consumers with access to the tools for switching energy supplier, at outreach events or at a follow up session thereafter.

105. Ofgem, as part of its Consumer Vulnerability Strategy, defined vulnerable consumers as satisfying one or both of the following criteria:⁸⁰

- they are significantly less able than a typical consumer to protect or represent his or her interests in the energy market; or
- they are significantly more likely than a typical consumer to suffer detriment, or that detriment is likely to be more substantial.

106. Ofgem define detrimental situations as including struggling to afford bills, living in a cold inefficient home, facing pressure sales tactics, struggling to understand and act upon information or choices (such as getting the best deal), or lacking the confidence or ability to pursue a query or complaint.

107. At Big Energy Savings Network events, trained advisors will be able to make use of the machine readable images to facilitate increased switching. In Winter 2013/14, these events reached at least 50,000 vulnerable consumers.⁸¹

108. The new licence conditions Ofgem has introduced to implement its RMR measures are expected to increase consumer engagement (see the 'Problem under consideration' section above for more details). However, due to the typically high level of disengagement (see figure 1 above) of vulnerable consumers, it is considered that the 50,000 consumers reached by the Big Energy Savings Networks will receive additional engagement benefits through the use of machine readable images at assisted action events, on top of any benefits received in the baseline scenario.

109. One way to measure the potential benefits to consumers of increased engagement in the energy market is to consider the possible savings realised through switching to cheaper energy tariffs. Ofgem's IA for the domestic RMR proposals suggests that it is highly likely that disengaged consumers have never switched before and so can be expected to achieve savings of around £165 per year (2014 prices),⁸² the average saving for a consumer switching for the first time.⁸³ Switchers in this group of vulnerable people can be expected to reap these savings for at least one year. These savings constitute a reallocation of economic surplus from suppliers to consumers, representing a benefit for consumers.

⁷⁹ DECC (2013) 'Ensuring a better deal for energy consumers: Government Response to consultation on DECC's discussion document' [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200051/gov_response_ensuring_better_deal_consumers.pdf

⁸⁰ Ofgem (2013) 'Consumer Vulnerability Strategy', p.12 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/75550/consumer-vulnerability-strategy.pdf>

⁸¹ The final evaluation will be completed by September, and interim figures will be available to Government shortly.

⁸² Ofgem (2012) 'The Retail Market Review – Draft Impact Assessment for the updated domestic proposals', p.36 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39459/retail-market-review-draft-impact-assessment-updated-domestic-proposals.pdf>

⁸³ This is based on using the GDP deflator to express the Ofgem 2012 figure on real 2014 prices.

Indirect benefits to 'passive' consumers

110. Approximately 20% to 30% of consumers in the energy market are "passive", according to Ofgem.⁸⁴ This means they have switched in the past but are currently unlikely to switch soon, given the current tools available to consumers. These tools are in the process of being improved by the RMR.⁸⁵ However, it is considered that placing machine readable information on consumer's bills may be expected to raise their level of engagement and increase their switching rate compared to the baseline scenario. The number of these consumers which switch supplier can be expected to achieve savings of around £75 per year (2014 prices), the average potential saving across all consumers.⁸⁶ These savings constitute a reallocation of economic surplus from suppliers to consumers, representing a benefit for consumers.

Potential 'deadweight loss' reduction benefits

111. According to Ofgem's latest National Report to the European Commission, the Herfindahl-Hirschman Index (HHI), a commonly used measure of competition, was 1,720 for the UK domestic retail electricity market and 2,373 for the UK domestic retail gas market in December 2012.⁸⁷ Under the Office of Fair Trading (OFT) definition, this means the domestic retail electricity market is 'concentrated' (has a HHI above 1000) and the domestic retail gas market is 'highly concentrated' (has a HHI above 1800).⁸⁸ In a perfectly competitive market the HHI would be just above zero, indicating that UK domestic retail energy markets are not perfectly competitive.

112. Theoretically, in a non-perfect market suppliers can price above marginal cost, which causes a 'deadweight loss' to society as customers consume sub-optimally low quantities as a result of the price being above marginal cost (assuming demand is not infinitely inelastic). In such a market, an increase in competitive pressure would lead to a reduction in price resulting in an increase in demand from consumers and a reduction in 'deadweight loss', i.e. a net gain to society as a whole.

113. In the Great Britain (GB) energy market, domestic energy consumers' demand for energy is inelastic meaning that demand for it is not very responsive to price; it is a commodity that everyone needs.^{89,90} This means that if an increase in competitive pressure were to lead to a reduction in price, the change in energy demand from consumers would be small, as would the net gain to society.

Possible further indirect benefits

114. Suppliers may choose to go further than the minimum required to comply with the policy by offering an enhanced consumer experience. For example by generating URL web addresses and offering consumers a choice of uploading their data into an optimised section of their suppliers' website.⁹¹ These web pages could utilise the data in a variety of ways, for example to allow intra-supplier tariff comparisons, which would represent an indirect benefit for consumers.

⁸⁴ Ofgem (2011) 'The Retail Market Review – Findings and Initial Proposals: Supplementary appendices' [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39709/mrappendices.pdf>

⁸⁵ Ofgem (2013) 'The Retail Market Review – Implementation of Simpler Tariff Choices and Clearer Information: Decision' [web], available at: https://www.ofgem.gov.uk/sites/default/files/docs/decisions/the_retail_market_review_-_implementation_of_simpler_tariff_choices_and_clearer_information.pdf

⁸⁶ Ofgem (2012) 'The Retail Market Review – Draft Impact Assessment for the updated domestic proposals', p.36 [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/39459/retail-market-review-draft-impact-assessment-updated-domestic-proposals.pdf>

⁸⁷ Ofgem (2013) '2013 Great Britain and Northern Ireland National Reports to the European Commission', pp.60-1 (electricity) and p.112 (gas) [web], available at: <https://www.ofgem.gov.uk/ofgem-publications/82755/2013greatbritainandnorthernirelandnationalreportstotheeuropeancommission.pdf>

⁸⁸ OFT (2003) 'Mergers: Substantive assessment guidance', p.23 [web], available at: http://www.offt.gov.uk/shared_offt/business_leaflets/enterprise_act/offt516.pdf

⁸⁹ The price elasticity of demands measures the percentage change in demand for a one per cent change in the price. A figure of between 0 and -1 mean that demand is price inelastic – for each percentage change in price, there's a lesser change in the quantity demanded. Studies put the long-run price elasticity of demand at between -0.32 and -0.81 for electricity and around -0.36 for gas. See Bernstein and Griffin (2005) 'Regional Differences in the Price-Elasticity of Demand for Energy' [web], available at: http://www.rand.org/pubs/technical_reports/2005/RAND_TR292.pdf

⁹⁰ See also Espey, J.A. and Espey, M. (2004), 'Turning on the Lights: A Meta-Analysis of Residential Electricity Demand Elasticities' [web], available at: <http://ageconsearch.umn.edu/bitstream/42897/2/Espey%20,IAAE%20April%202004.pdf>

⁹¹ A 'vanilla' reading is the result of scanning the machine readable format with a common, freely available scanning application on smartphone or similar device.

115. In addition, there is also a strong possibility that third parties, for example switching sites, will develop applications to utilise the data embedded in the machine readable formats.⁹² Informal feedback so far suggests that switching companies are keen to develop applications to read the formats in order to offer tariff and usage changes. Through discussions with industry, one switching company estimated that the cost of developing such applications would be relatively low, at around £25k - £100k per operating system. It is considered that the development of such applications will raise levels of engagement and increase switching rates, compared to the baseline scenario in which Ofgem's new license conditions remain in force.
116. To the extent this results in consumers realising savings through increased levels of switching, compared to the baseline scenario, economic surplus will be reallocated from suppliers to consumers, representing an indirect benefit for domestic retail energy consumers. These benefits count as indirect for the same reason the corresponding costs to suppliers count as indirect, as outlined in paragraph 95 above.
117. It has not been possible to monetise the preceding benefits due to uncertainty about:
- the degree to which the machine readable images and possible third party applications will bring about additional switching, on top of the level which would be expected in the baseline scenario;
 - the likelihood of third parties, for example switching sites, developing applications to utilise the machine readable formats;
 - the current price and marginal cost structure of the retail energy market; and
 - the extent to which the policy will increase competitive pressure in the retail energy market.

Wider benefits

Competition and innovation

118. A consumer's increased access to their own data should empower them through the enhanced ability to search (overcoming imperfect information) and choose the right tariffs for them, which should serve to heighten competition between firms.
119. In addition, other respondents to DECC's consultation on the proposed legislation have argued that smaller suppliers are likely to be amongst the major beneficiaries of the increased consumer engagement and switching rates which are expected to result from this policy. This implies that the policy could facilitate a redistribution of market shares between suppliers. However as discussed in paragraph 81 above, these smaller suppliers are also expected to bear a disproportionate share of the set-up and close down costs associated with the policy.
120. The benefits to consumers resulting from increased switching rates are discussed in detail above, but there may be longer term benefits in terms of cost reduction and improved firm performance.
121. In the literature review, ICF/GHK note that, 'Enhanced decision-making by active consumers with the confidence to engage in markets can have a significant impact on the competitiveness of the economy, by acting as a driver for long term economic growth through intensifying competition and innovation (European Commission 2011 and OFT 2011).
122. Therefore, there is a clear theoretical link between consumer empowerment and competition (and ultimately economic growth). However, largely due to the difficulty of identifying outcomes and the relative novelty of the Midata concept, there is little in the way of quantitative evidence to estimate the extent to which Midata directly contributes to consumer empowerment and the growth impact of empowerment.

⁹² BIS (2014) 'Feasibility study on the use of QR codes in the energy sector', p.17 [pdf], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/276198/bis-14-519-midata-programme-feasibility-study-on-use-of-qr-codes-in-energy-sector.pdf

New and expanding use of third party intermediaries

123. The internet has opened up new markets for providing information to consumers. A survey by the OFT in 2009⁹³ estimated that 60% of internet shoppers used a price comparison site to find/search for goods or services to buy online and, of those, the proportion that used more than one price comparison site was 71%.
124. If consumer can access their own data more easily, then potentially a broader range of services could become available to consumers based on the newly available type of information. For example, tariff comparison applications were discussed in detail above. However, other services could be also developed, for instance applications to use the data to provide advice on potential savings from energy efficiency measures.

Changes in consumption patterns

125. As well as helping consumers compare tariffs, easier access by consumers to their own key data is expected to help them analyse their consumption and drive improvements to their spending patterns and lifestyle. Particularly with application to energy markets, easier access to data could encourage consumers to make choices which minimise the financial and carbon burdens of their consumption. The Midata project working group highlighted the potential for applications which read the machine readable images to encourage energy consumers to think about usage. For example, energy 'gamification' could play a key role in future applications.

Quantification of potential switching savings

126. Although, as discussed in the 'Non-monetised benefits' section above, it has not been possible to monetise any of the benefits of this policy, an illustrative analysis of quantifiable switching savings is presented here.
127. As explained in the paragraph 110 above, on average consumers can be expected to achieve annual savings of around £75 per year (2014 prices). Therefore, if just fewer than 3,300 consumers switch suppliers in each year of this policy as a result of the informational advantages of machine readable formats, the annual switching savings realised will be equal to the expected monetised recurring annual costs of this policy.⁹⁴ It should be noted, however, that these savings will largely be a reallocation of economic surplus from energy suppliers to consumers so are unlikely to affect the NPV of the policy.

Risks and Sensitivities

Risk of Options

128. For any given supplier, there is a risk that they opt to comply with the legislation by choosing a machine readable format which the market later renders obsolete, which would potentially be costly for that supplier. Furthermore, if fewer consumers choose to use a particular format in order to access their own data, then the potential benefits of the policy will be reduced. There are numerous examples in recent history of technologies which have become obsolete, rendering the associated data formats less useful (e.g. High-Definition DVDs and MiniDiscs).
129. Option 1 mitigates these risks by allowing for freedom of innovation by suppliers in the way in which they comply with the legislation, rather than prescribing a particular type of machine readable format.

Assumptions

130. There are a number of assumptions made in the calculations of the costs and benefits to each Option, as discussed above (see Box 3).

⁹³ OFT (2009) 'Findings from consumers surveys on Internet Shopping: A comparison of pre and post study consumer research' [web], available at: http://www.of.gov.uk/shared_of/reports/Evaluating-OFTs-work/of1079.pdf

⁹⁴ Annual cost = £0.25m; average switching saving = £75. Therefore the number of switches required to offset the annual cost is £0.25m/£75 = 3,300.

Box 3: Summary of assumptions

- The appropriate discount rate for future costs and benefits is 3.5% per year;
- the policy is appraised over the five year period from 2015-19; and
- half as much ink is required to print a QR code compared to an alternative machine readable format.

Small and micro business assessment

Position of small and micro businesses energy suppliers in the market

131. DECC believes⁹⁵ there to be 10 small or micro businesses according to the Better Regulation definition, which defines them as having up to 49 full-time equivalent (FTE) employees.⁹⁶ The total market share of these 10 suppliers is estimated to be around 0.4% (amounting to around 112,000 customer accounts). If the direct monetised costs of this policy were borne by all suppliers without any exemption, these small and micro business suppliers would be expected to bear around 4.2% of the one-off set-up and close-down costs associated with this policy – around £149,000 in total (2014 prices) – which is much greater than their market share. They would also be expected to bear 0.4% of the recurring annual costs of this policy – around £900 in total (2014 prices). Additionally, some of the (non-monetised) indirect benefits of switching to a cheaper energy tariff as a result of this policy may accrue to these suppliers who fall into the domestic sector of the retail energy market.
132. Energy suppliers which are small or micro businesses make up a very small proportion of the market. Furthermore, as discussed in paragraph 82 above, customers switching to suppliers outside of the big 6 represent a high and increasing proportion of total switches. If we take switching to be a reasonable measure of consumer engagement, it is then we can then infer that those customers of energy suppliers which classify as small or micro businesses are more likely to be engaged than those customers of larger suppliers.

Proposed exemption

133. Drawing on the arguments from paragraph 132 above, the Government believes that a significant and sufficient proportion of the intended benefits of this policy can be achieved without including small and micro businesses within the scope of the regulation. The vast majority of consumers would still have access to machine readable images, and the marginal loss of benefit to customers of small or microbusiness energy suppliers is expected to be low due to their likely higher levels of engagement (see paragraph 132 above). Therefore, in recognition of the disproportionate burden placed on small and micro business suppliers by the one-off set-up and close-down costs of this policy, the Government proposes to exempt them from the regulation.
134. In practice, DECC proposes that this exemption be based upon the number of customer accounts a supplier has rather than the number of FTE they have. This is because, where there are existing policy exemption thresholds, these are defined in terms of customer accounts and not on the basis of number of FTE employed.⁹⁷ For example the Green Deal and Feed-In Tariffs scheme both have a customer account threshold of 250,000 accounts above which a supplier is required to contribute to the costs of these policies. Furthermore suppliers with less than 50,000 are exempted from the requirement to provide a choice of payment methods to their customers.
135. As a result, setting the exemption based on the number of FTE would add a layer of complexity into the retail energy market, creating a new measurement for Licence holders and the Regulator to understand, interpret, report on and enforce against.

⁹⁵ We do not have complete data on the number of persons employed by the smaller independent suppliers so we have estimated this figure on the basis of the information we do have. The underlying assumption we have used is that the number of employees a supplier has is proportional to the size of their customer base.

⁹⁶ BIS (2013) 'Better Regulation Framework Manual: Practical Guidance for UK Government Officials', pp.26-7 [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211981/bis-13-1038-better-regulation-framework-manual-guidance-for-officials.pdf

136. The Government therefore proposes that energy suppliers with fewer than 50,000 customers for a given fuel will be exempt from the policy with regards to bills and statements of account relating to that fuel. For example a supplier with 60,000 electricity customers and 40,000 gas customers would be required to provide machine readable formats to their electricity customers but not their gas customers. This proposed exemption is consistent with an existing exemption in place, whereby suppliers with less than 50,000 are exempted from the requirement to provide a choice of payment methods to their customers. Therefore it should not add complexity to reporting requirements for energy suppliers, which would potentially be burdensome.
137. The proposed exemption will cover the smallest 12 energy suppliers (with a total market share of around 0.5%, or roughly 171,000 customer accounts), including the 10 which are believed to be small or micro businesses. Although this does mean that 2 energy suppliers will be exempt, which are not technically small or micro businesses according to the Better Regulation definition, the Government is taking a conservative approach to be highly confident that the exemption will cover all small and micro businesses for the duration of the policy.⁹⁶
138. There is nothing to prevent exempt suppliers from voluntarily adopting the policy and placing machine readable formats on their customers' bills and statements of account. If the machine readable formats are received well by consumers then exempt suppliers may well choose to provide them for their customers. The Government therefore proposes to allow exempted suppliers to voluntarily "opt-in" to the full regulatory regime and pursue voluntary compliance, as set out in the Better Regulation Manual⁹⁸.
139. It could be adverse to competition to require some suppliers to place machine readable images, which could facilitate the switching of their customers to other suppliers, whilst not requiring others to do so. However, as discussed in paragraph 132 above, customers of small or micro business energy suppliers are likely more engaged than other customers. Therefore, the marginal impact of machine readable formats on their behaviour would be expected to be low. As a result the Government considers the risk of the exemption undermining competition to be negligible.

One-in, two-out

140. This policy represents an IN of £1,194,000 per year (rounded to the nearest thousand), driven by the one-off set up costs and recurring printing costs, all of which are costs directly borne by business.
141. Although it has not been possible to monetise the costs to suppliers (and corresponding benefits to consumers) of increased switching rates resulting from this policy, these are indirect costs so do not affect the EANCB of the policy.

⁹⁶ Data on FTE employees was taken from suppliers' published annual accounts and a dataset provided by Cornwall Energy. Data on customer numbers was also provided by Cornwall Energy.

⁹⁸ BIS (2013) 'Better Regulation Framework Manual: Practical Guidance for UK Government Officials', p.27 [web], available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211981/bis-13-1038-better-regulation-framework-manual-guidance-for-officials.pdf

a separate software program or otherwise), the Relevant Data Items for Gas are loaded on to the Relevant Device in accordance with the Specified Sequence without any requirement for the Domestic Customer to input further information into the Device; where the Domestic Customer is supplied with electricity and gas under a Dual Fuel Account the licensee may use a single Optical Label containing the Relevant Data Items for Gas and the Relevant Data Items for Electricity in accordance with the Specified Sequence; data items other than Relevant Data Items may be included in the Optical Label provided they do not interfere with the Specified Sequence or with the ability of a Relevant Device to scan, access and load any of the Relevant Data Items in accordance with this provision”.

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Secretary of State
Department of Energy and Climate Change

