Annexes - Consumer switching

Annexes 5-12 of consultation
Consumer switching: Proposals to reform switching of mobile communications services

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Consultation Annexes

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Contents

Annex 5

Consumer research methodology

A5.1 Our conclusions set out in our March and July 2016 consultations concerning the potential harm arising from current switching processes as well as the potential consumer benefits of process reform were, in large part, informed by several pieces of consumer research.[1] Some mobile operators (BT/EE, Sky, Virgin, Vodafone), in their responses to our March and July 2016 consultations, set out a number of criticisms of the methodologies used in the consumer research referenced there.

A5.2 We summarise here the views received, followed by our considered response.

Summary of respondents' views

A5.3 We have summarised respondents' views concerning our consumer research methodology under the following headings.

Use of 'main', 'major' and 'minor', and prompting questions in the BDRC research

A5.4 BT/EE, Virgin, and Vodafone argued that the research approach undertaken by BDRC lacks or deters objectivity. Their specific concerns were that the BDRC research:

- Assumes that all consumers have experienced issues when they switched, by prompting all consumers (even the ones who may not have experienced any issues) with a list of potential difficulties. Consequently, these questions were 'leading questions' and so could bias responses and/or constitute weak evidence (BT/EE, Virgin, Vodafone). BT/EE also suggested that Ofcom had acknowledged, in its footnote 20 to the March consultation, that switching related issues may have been identified solely because they were prompted.

- Asked respondents whether items on a list had presented no difficulty at all, a minor, or a major difficulty, without defining what a major or minor issues was (BT/EE). Vodafone also argued that research automatically recorded any difficulty identified as the 'main' difficulty.

- Presented questions to consumers that presuppose 'provider persuasion to stay' is a difficulty and hindrance to switching (Virgin).

Difficulties of switching are incompletely researched

A5.5 Virgin argued that the BDRC research failed to drill down into consumers' perceived difficulties of switching. They noted for example that although the research found that 5% of respondents cited "keeping their current mobile number" as a 'main' difficulty, it nevertheless remained unclear why consumers have difficulty with keeping their existing number.

[1] Annex 10 of our March 2016 consultation set out our key research findings and summarised the relevant consumer research

A5.6 Virgin's conclusions included that Ofcom should have sought consumers' views on their relative preferences for current switching processes, compared to the changes proposed by Ofcom.

A5.7 Sky commented, in relation to double paying and notice periods, that the BDRC research, when asking respondents to recall the reasons why they experienced contract overlap, failed to include any options relating to a specific desire to run two services concurrently, other than 'to ensure continuous service'. Sky also commented that footnote 34 in Ofcom's July consultation stating that "… among the 24% of C&R switchers who said they wanted contract overlap, the most popular reason was to ensure a continuous mobile service…" is incorrect.

Conflation or multiplicity of research methods

A5.8 BT/EE noted that Ofcom's assessment of harm used a number of pieces of consumer research, carried out by different agencies, using different methodologies and different questions. They argued that, as a consequence, it was difficult to compare results of these research pieces.

A5.9 Vodafone noted that Ofcom had already conducted extensive research on mobile switching across a wide customer base (10770 consumers in Ofcom's Switching Tracker 2015), which found that 94% of mobile switchers found the mobile switching process to be easy. Vodafone argued here that in spite of these findings, Ofcom continued research to probe the hypothesis that any process which is not GPL must be incorrect.

Sample sizes

A5.10 BT/EE noted that the results of Ofcom's qualitative diary research are not statistically representative, owing to the small sample size used.

A5.11 Vodafone emphasised that the number of switchers who took part in the BDRC quantitative and Jigsaw qualitative diary research (1365 consumers in total) is insignificant in comparison to the number of consumers who switch provider each year.

Ofcom's response

A5.12 We have responded to views concerning our consumer research methodology as follows.

Use of 'main', 'major' and 'minor', and prompting questions in the BDRC research

A5.13 We continue to believe that the research methodology, including use of 'main', 'major', 'minor' and a prompted set of issues are consistent with our research aims and produce robust and valid findings. This is for the following reasons.

A5.14 The BDRC survey was designed to understand the detailed experiences of switchers, some of whom had switched up to 2 years prior to the research. It was necessary therefore to prompt respondents with a list of experiences and possible difficulties, to aid recall. This is a standard and recognised technique in market research.

A5.15 Contrary to some feedback received, the BDRC survey did not assume 'experiences' equated 'difficulties' as set out on slide 4 of our research slide pack.

Respondents were only asked if specific 'experiences' had proved difficult (and were presented with an option to say 'not at all difficult') – a code that was used by respondents. Further, the study did not automatically assume provider persuasion was a difficulty. As shown on slide 31, half (51%) of switchers 'experienced' their previous provider persuading them to stay, and difficulty ratings were only asked of this sub-set of respondents, as shown on slide 33.

A5.16 We inserted footnote 20 in our March 2016 consultation to recognise that the use of prompting may over inflate the severity of some difficulties experienced by the respondent. That is, it is possible that issues a respondent may not have considered 'big enough' to mention spontaneously may have been noted as a 'minor' difficulty, as a result of prompting.

A5.17 We consider that it is much less likely however that prompting would lead to a 'minor' difficulty being inflated to a 'major' difficulty. And we do not consider it likely that findings report 'difficulties' that do not exist, as this would suggest we do not believe the results of market research.

A5.18 We took a highly conservative approach to the analysis of difficulties in mobile switching, in that we focused our attention on difficulties identified by respondents as 'major'.

A5.19 Taking this approach does not mean analysis of 'minor difficulties' should be ignored. These still impact the overall experience of switching as highlighted on slide 39 of the BDRC 2015 research. While 87% stated ease of switching, among switchers who experienced only minor difficulties, could be interpreted as 'high', we would note that stated ease is higher (92%) among those who experienced no difficulties. Further, the proportion citing 'very easy' is more than twice that, of those only experiencing minor difficulties (61% vs. 27%).[2]

A5.20 Vodafone argued that the research automatically recorded any difficulty identified as the 'main' difficulty. We refute this point as follows. Respondents who reported multiple 'major' difficulties were asked which of these was the 'main' difficulty. Only those citing a singular major difficulty was automatically recorded as the 'main' difficulty for that respondent. The research did not however, report any 'minor' difficulties as a 'main' difficulty and as stated on slide 36, 62% of switchers had no major difficulty and therefore, no 'main difficulty' was reported.

A5.21 Concerning the definitions of 'major', 'minor', and 'main', we comment as follows:

- To try to define a level of severity for each individual attribute covered would not have been feasible in a study of this nature. We had to carefully balance the level of detail collected against the potential for respondent fatigue and effect on the quality of responses.

- Equally it would not have been appropriate to draft a single definition to cover the various attributes.

- Instead we opted for a self-defined approach which we believe reflects the respondents' experience and likely impact 'difficulties' had.

[2] BDRC 2015 slide 39

Difficulties of switching are incompletely researched

A5.22 Regarding concerns that difficulties of switching are incompletely researched, we consider the BDRC research met its objectives. While unprompted questioning could have provided additional insight, this would have been required to replace other more critical areas of questioning, being mindful again of respondent fatigue and its effect on the quality of data.

A5.23 Regarding Sky's comment on footnote 34 in the July 2016 consultation, we note that the footnote refers to a sub-group of C&R switchers i.e. those who had both experienced and *wanted* a contract overlap. As the footnote states, among this group, the most frequently stated reason for wanting a contract overlap was to ensure a continuous service.[3]

A5.24 We note further that we have, since our March and July consultations, undertaken further consumer research to understand consumers' experiences of switching. We discuss this in paragraphs 3.58 to 3.113. This research includes consumer views on the current process for cancellation and PAC requests and attitudes towards potential switching reform options compared to current switching processes.

Conflation or multiplicity of research methods

A5.25 Ofcom undertook a programme of research into mobile switching behaviour. Each study was designed to meet its individual objectives. The two quantitative studies are not directly comparable and were not designed to be.

A5.26 The qualitative diary study provided a more detailed insight into switching experiences than could be obtained via quantitative research. It is complementary to the quantitative evidence on mobile switching experiences rather than directly comparable.

A5.27 Annex 10 of our March 2016 consultation set out results from a number of pieces of consumer research and explained the research methodology underlying each. We believe for these reasons it is appropriate and insightful to reference a range of results from a range of consumer research pieces.

Sample sizes

A5.28 Regarding the question of the "Diary" research and the sample size, we note that this research is qualitative, aimed at understanding the types of issue that can arise during the switching process. As such it was not intended to, nor can it, generate quantitative and statistically robust results.

A5.29 The BDRC research was a quantitative online study, designed to achieve robust samples of particular groups of interest, e.g. PAC switchers.

[3] BDRC 2015 bespoke analysis

Annex 6

Use of research, and updated findings

A6.1 This annex summarises relevant further evidence sources and key findings concerning consumers' experiences of and views of mobile switching that we have gathered and published since our July 2016 consultation.

Further and updated evidence sources

A6.2 Since our March and July 2016 consultations, we have commissioned further research and gathered additional evidence concerning switchers' experiences of current switching processes as well as their views on the two reform options we have proposed.

A6.3 In particular, we have:

- Commissioned further quantitative consumer research on mobile switching
- Obtained further data from mobile operators about the time consumers spend requesting and obtaining PAC codes.[4]

A6.4 We have also taken account of the following:

- Ofcom's Switching Tracker 2016.[5]
- Updated data on complaints received by Ofcom concerning changing mobile provider.
- Obtained further consumer research results concerning loss of service experienced by consumers when they switch mobile provider.[6]
- Data on the incidence of number ports taking place within one business day to further inform our understanding to the extent that this is likely to result in loss of service.
- Data from our SME Tracker 2016 - our consumer research regarding small businesses' (small and medium sized enterprises – "SMEs") experiences of communications services.[7]

BDRC 2017 consumer research

A6.5 The BDRC 2017 research aimed to provide a better understanding of:

[4] We asked mobile providers for this information in autumn 2016 and hence it is additional to similar information referenced in paragraph A10.3 of our March 2016 consultation.
[5] Data tables available online https://www.ofcom.org.uk/__data/assets/pdf_file/0025/95524/Switching-Tracker-2016-Data-tables.pdf
[6] BDRC omnibus December 2016 https://www.ofcom.org.uk/__data/assets/pdf_file/0025/101995/Mobile-Switching-Research-2017-Omnibus-data-tables.pdf
[7] See: https://www.ofcom.org.uk/research-and-data/consumer-experience/sme-research

- the experience and attitudes of consumers who had switched mobile provider concerning contact with the provider they are leaving, including experiences of requesting a PAC; and

- if and why consumers might prefer to use either of our two reform options for switching and porting, rather than the current methods. To inform this question we also researched consumers' willingness to pay to use either of our reform options.

Methodology

A6.6 The research was conducted in January-February 2017 and comprised an online survey of 2,009 mobile consumers who had switched mobile provider up to 18 months prior to the survey. It included consumers who had switched and ported their number via the PAC process, and those who had switched but not ported, i.e. had switched using the C&R (cease and re-provide) arrangements.

A6.7 We have published BDRC's research findings and data tables on the Ofcom website.[8]

Summary of findings

Incidence of porting when switching, and preferences regarding number porting

A6.8 Around two-thirds of switchers (i.e. switched in the last 18 months) (65%) ported their mobile number when switching, and so followed the PAC process.[9] The remainder (35%) did not port their number and so used C&R arrangements to switch.

A6.9 While verbatim responses do not provide a comprehensive account of the reasons switchers do not keep their mobile number, they indicate that at least some are deterred from doing so due to issues or concerns with the current process.

A6.10 Around one in six C&R switchers (15%) said they 'really wanted to' or had a 'mild preference' for keeping their mobile number, when they last switched. Various reasons were cited for not-porting their number, including "wanting a second number" and perceptions or stated difficulties doing so; "easier to stick with the one I was given"; or "the process was taking too long". These are set out in full in the research summary.

Methods used to request PAC and/or cancel

A6.11 PAC switchers needed to obtain a PAC from their old provider. Some C&R switchers requested a PAC but subsequently went on to switch without porting. All C&R switchers would have needed to have contacted their old provider directly to cancel their old service. Some PAC switchers also did this, instead of or in addition to using the port itself automatically to terminate their old service.

[8]See: https://www.ofcom.org.uk/consultations-and-statements/category-2/consumer-switching-proposals-to-reform-switching-of-mobile-communications-services

[9] BDRC omnibus December 2016: Face to face omnibus survey conducted in November-December 2016. Incidence among respondents who switched in the last 12 months was 63% PAC and 37% C&R. BDRC 2017 data was broadly comparable with omnibus data (65%/34%).

A6.12 Around three-fifths (61%) of PAC switchers contacted their old provider by telephone to request a PAC and/or cancel. Around a third (33%) of C&R switchers contacted their provider by phone to cancel their old service. Other methods such as web-form, web chat, email, in store were each cited by a minority of switchers as the method used to request a PAC and/or cancel.[10]

Attitudes to current methods for PAC request and/or cancellation

A6.13 Overall around 4 out of 5 of switchers (82% PAC request, 79% cancelling old service) said they were either 'very' or 'fairly' satisfied ('net satisfied') with the method/s they used to request a PAC code and/or cancel, while around 1 in 6 (16% PAC request, 14% cancelling old service) said they were 'very' or 'fairly' dissatisfied.[11]

A6.14 The survey asked consumers to state what they both liked and disliked (if anything) about the method/s they had used to request a PAC and/or cancel (irrespective of how the consumer had rated the method in terms of satisfaction or dissatisfaction). The findings (summarised in the research summary) suggest that many consumers found the method they used to request their PAC was simple and straightforward.

A6.15 Just over a third (35%) of those requesting a PAC stated words such as easy, simple and convenient (38% for those requesting a PAC by phone) to describe aspects their liked about this method. Fewer in comparison (19%) noted aspects related to quick/fast process (23% for those requesting a PAC by phone).[12]

A6.16 Aspects disliked about the previous method/s used related to difficulties contacting or speaking to the losing provider were cited by 13% of those requesting a PAC (11% among PAC switchers phoning to request a PAC, not statistically different to that among all PAC switchers).[13]

A6.17 Findings were similar in relation to methods used to cancel their old service.[14] Around a third (30%) of those who had cancelled their previous service (including both PAC and C&R switchers) said they found aspects of the method to be easy, simple and convenient (33% for those phoning to cancel). Half as many (15%) cited aspects related to quick / fast process (21% for those phoning to cancel).

A6.18 Around 1 in 6 (16%) mentioned aspects related to difficulties contacting or speaking to the losing provider (irrespective of whether they rated the method as satisfactory or unsatisfactory overall) as aspects they did not like about the previous method/s used when cancelling. For those cancelling by telephone, the proportion citing such aspects was 15%, not statistically different to that among all PAC switchers.

[10] BDRC 2017 slides 25 and 26
[11] BDRC 2017 slides 27 and 32
[12] BDRC 2017 slide 28
[13] BDRC 2017 Bespoke result: Net results for the aggregate of: Current provider / customer service pressured / tried to get me to stay / with their sales pitch; I could not understand customer service / staff; Customer service / staff was rude / impolite / unhelpful; Long wait / queuing / took a long time to get through on phone / web chat; Online or webchat would have been better / Having to call provider; It cost me to call / there were charges. Individual reasons reported on BDRC slide 30
[14] BDRC slides 33 to 36

Number of contacts to request PAC and/or cancel

A6.19 Respondents requesting a PAC and/or cancelling were also asked whether they had called their losing provider once or more than once to do this. Two-thirds (68%) of previous PAC switchers said they made a single call to request their PAC and/or cancel their previous service. The proportion of previous C&R switchers making a single call to cancel was broadly similar (72%).

Switchers' attitudes towards using Auto-Switch and GPL

A6.20 Respondents were shown diagrams which described how Ofcom's Auto-Switch and GPL options would work and explored respondents' stated take-up of these hypothetical options i.e. Auto-Switch to request their PAC either via a free text message or an online account, or GPL to switch provider. The diagrams used in the research are included in the research summary.[15]

A6.21 The results are summarised in the table below, illustrating the proportion who said they would take up each option i.e. probably or definitely would.

Figure A6.1 - Summary of stated take-up of each option, by previous process used

	Auto-Switch SMS	Auto-Switch SMS/online		GPL	
	n=1251	n=1251	n=758	n=1251	n=758
	PAC switchers	PAC switchers	C&R switchers	PAC switchers	C&R switchers
Definitely would	43%	43%	39%	28%	21%
Probably would	35%	36%	35%	38%	37%
Possibly/Possibly not	15%	17%	18%	22%	30%
Probably wouldn't	4%	2%	6%	8%	9%
Definitely wouldn't	2%	2%	3%	4%	3%
Net: 'would'	78%	80%	73%	66%	58%

A6.22 Alongside stated take-up we present 'adjusted' take-up levels. This adjustment takes account of the fact that when estimating take-up of a new product/service via market research, not all respondents will do what they say they will. Full details of the approach taken is set out in the research annex and technical report.

A6.23 The adjusted take-up levels are summarised in the table below.

[15] BDRC 2017 slides 41 to 43 and 71 to 72

Figure A6.2 - Summary of adjusted take-up of each option, by previous process used

Down weight applied to each (%)	Auto-Switch SMS	Auto-Switch SMS/online		GPL	
	n=1251	n=1251	n=758	n=1251	n=758
	PAC switchers	PAC switchers	C&R switchers	PAC switchers	C&R switchers
Definitely would (80%)	34%	35%	31%	23%	17%
Probably would (20%)	7%	7%	7%	8%	7%
Net: 'would'	41%	42%	38%	30%	24%

A6.24 Verbatim responses provide some qualitative insight into attitudes towards the reform options. As such the research also asked why consumers might or might not be interested in requesting a PAC via a free text message or an online account, or in using the GPL option to switch provider.

A6.25 Respondents who said they would use Auto-Switch perceived this to be 'easy/easier, simple, quick/quicker', with similar perceptions for GPL among those who said they would use this option.

A6.26 Among those who said they would not use Auto-Switch reasons were more varied and covered perceptions of complexity, impersonal method, preference for other methods e.g. do not text. For GPL attitudes were also varied but a perception of 'complexity' was evident for this scenario.

Switchers' willingness to pay for the reform options

A6.27 The study also explored previous switchers' willingness to pay for these options. Respondents were asked how much they would be willing to pay for up two scenarios, with Auto-Switch SMS and GPL being prioritised over Auto-Switch online if the respondent said they would use all three.[16] As with the analysis of take-up, we present both stated willingness to pay analysis and adjusted data. The latter seeks to address the likelihood that not all respondents who provided a value, will go on to take up the process. Figures A6.3 and A6.4 summarise the findings. As above, full details of the approach taken is set out in the research annex and technical report.

[16] Further detail of the approach taken is contained in the Research Summary and Technical Report

Figure A6.3 - Stated average willingness to pay for each scenario, by previous process used

	Average definitely WTP* (definitely WTP if definitely/probably take up: as stated)	Average probably WTP** (definitely/ probably WTP if definitely/ probably take-up: as stated)
All C&R switchers (n=758)		
GPL	£0.51	£1.28
Auto-Switch SMS/online	£0.52	£1.41
C&R switchers who would take-up the option		
GPL (n=430)	£0.90	£2.26
Auto-Switch SMS/online (n=539)	£0.73	£1.98
All PAC switchers (n=1251)		
GPL	£0.67	£1.63
Auto-Switch SMS	£0.59	£1.51
Auto-Switch SMS/online***	£0.62	£1.59
PAC switchers who would take up the option		
GPL (n=807)	£1.04	£2.53
Auto-Switch SMS/online (n=959)	£0.77	£1.98

Figure A6.4 - Adjusted willingness to pay for each scenario, by previous process used

	Average definitely WTP* (definitely WTP only if definitely take-up: down-weighted by take-up: 80/0)	Average definitely WTP* (definitely WTP if definitely/probably take up: down-weighted by take-up: 80/20)	Average probably WTP** (definitely/ probably WTP only if definitely take-up: down-weighted by take-up: 80/0)	Average probably WTP** (definitely/ probably WTP if definitely/ probably take-up: down-weighted by take-up: 80/20)
All C&R switchers (n=758)				
GPL	£0.27	£0.31	£0.54	£0.66
Auto-Switch SMS/online	£0.34	£0.36	£0.71	£0.82
All PAC switchers (n=1251)				
GPL	£0.44	£0.47	£0.72	£0.87
Auto-Switch SMS	£0.37	£0.39	£0.66	£0.80
Auto-Switch SMS/online***	£0.39	£0.42	£0.70	£0.85

The SME experience of communications services

A6.28 In our March 2016 consultation we explained that the scope of our mobile switching review covered both residential consumers and businesses, where they were switching fewer than 25 mobile numbers (i.e. excluding "bulk ports" which we defined to be 25 numbers or more). In our January cost update, we identified that the inclusion of switches (of fewer than sets of 25 numbers) by SME customers within the scope of any switching process reforms, would have an impact on the industry costs of implementing the reforms.

A6.29 In light of this, and the fact that our March and July 2016 consultations focused on findings for residential consumers only, we have examined in more detail the experiences of SMEs when switching mobile provider. We summarise findings here.

Methodology

A6.30 Ofcom monitors small and medium sized businesses' ('SMEs') experiences of communications services. Our 2016 research[17, 18] between May and July 2016 surveyed 1,501 SMEs with 1 – 249 employees. It explores use, experience and attitudes towards communications services and service providers among SMEs across the UK, including in the mobile market. Research topics included SME engagement with the market, actual and planned switching and barriers to switching.

A6.31 We have also had regard to consumer research undertaken for Ofcom's consultation on Automatic compensation, which we have used to report SMEs expenditure on mobile services.[19]

Summary of findings

Profile of SMEs

A6.32 In 2016 there were around 5.5 million small SME businesses in the UK each employing 0 to 49 employees. A further 33 000 medium sized SMEs each employed 50 to 249 employees.[20]

A6.33 Research data suggests that SMEs that take mobile services have broadly comparable consumption and usage characteristics to residential consumers. In particular, our research findings suggest that fewer than 1% of SMEs who take

[17] The SME 2016 research report is available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0030/96348/Ofcom-SME-consumer-experience-research-2016-Report.pdf

[18] Data tables available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0029/96491/Ofcom-SME-Consumer-Experience-Research-2016-Data-Tables.pdf

[19] 2016 Automatic compensation Research: https://www.ofcom.org.uk/__data/assets/pdf_file/0026/98711/automatic-compensation-jigsaw-report.pdf

[20] Department for Business, Energy and Industrial Strategy: Business population estimates for the UK and regions 2016 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/559219/bpe_2016_statistical_release.pdf

mobile services have mobile consumption and usage characteristics that are very different to residential mobile consumers.[21]

A6.34 Ninety percent of SMEs taking mobile services employ four or fewer people, with around two fifths (37%) employing one employee. Around two thirds (64%) of SMEs who employ 1-9 employees use mobile services, compared to 72% who employ 10-49 and 80% of those employing 50 – 249 employees.

A6.35 Research findings suggest that more than two in five (44%)[22] SMEs take residential mobile tariffs, with many (53%) saying this was because "a personal contract was fine for their business".[23] Findings also include that around three quarters (75%) of SMEs with business contracts took standard terms and conditions, in many respects resembling those of residential tariffs, as opposed to having negotiated their own.

A6.36 Mobile contracts for residential consumers have a duration of two years or less. Similarly, around three quarters (73%) of SMEs signed up to a contract with duration of two years or less. Only 12% take contracts that exceed 2 years.

Switching and ease of switching

A6.37 More than half (55%) of SMEs using mobile phones had never switched these services, while 10% had switched mobile provider in the last 12 months (17% in the last two years). Around 4% said they were actively looking for a new provider and 6% had considered switching in the last two years but then decided not to. The main reason given for not switching supplier among those who had considered switching, was acceptance of an offer to stay - cited by 22%.[24]

A6.38 Stated ease of switching among SMEs stood at 93% among mobile switchers, while 7% described it as quite or very difficult.[25]

A6.39 However, when prompted with potential difficulties to aid recall of their experience, seven in ten SME mobile switchers said they had experienced no difficulties when switching. Thirteen percent cited "Process took longer than expected" as a difficulty when switching mobile provider. Around one in ten said they experienced difficulties with each of the following when switching mobile; provider persuasion to stay; temporary loss of service; previous provider sending bills for cancelled service; obtaining information on switching from previous provider; or difficulties contacting the provider to cancel the service. Some (7%) stated difficulty getting a PAC from their existing provider (7%).[26]

A6.40 Altogether, 20% of SME mobile switchers experienced difficulties with at least one of the following: Process took longer than expected, existing provider persuasion to

[21] i.e. less than 1% of SMEs taking mobile services have more than one employee, and take a non-residential bespoke tariff, and have a contract whose contract duration exceeds two years.
[22] SME 2016 research report, Figure 117
[23] SME 2016 research, table 144
[24] SME 2016 Research report §7.3, Figure 98. Low base size, treat as indicative only.
[25] SME 2016 Research report §7.3.4
[26] SME 2016 Research report §7.3.4

stay, difficulty contacting provider to cancel service, difficulty getting a PAC from existing provider.[27]

A6.41 We estimate therefore that 100,000 SMEs experience difficulties each year switching their mobile, related to difficulties with the losing provider.

Industry data on proportion of mobile number ports completed by next business day

A6.42 Mobile operators provided data for the period July to December 2016 concerning the proportion of mobile number ports which occur by the next business day. Figure A6.5 summarises the data we received.

Figure A6.5

Total number of mobile ports not completed by next business day, as a proportion of sum of "Port In" and "Port Out" mobile switches %	July 2016	August 2016	September 2016	October 2016	November 2016	December 2016
Proportion not completed by next business day	1.4%	2.2%	1.4%	2.7%	2.0%	1.7%

Source: Mobile operator data. Data excludes where possible ports that occur in sets of more than 24 numbers.

A6.43 The data suggest that around 2% of mobile ports do not take place by the next business day, equivalent to around 6 000 ports per month, based on present porting volumes of around 300 000 mobile ports per month.

Consumer contact to request and obtain PAC codes

A6.44 We received under our section 135 powers more detailed quantitative data from mobile operators regarding the time consumers spend on calls to operators when requesting PACs and/or cancelling by telephone.

A6.45 We asked them to provide, for pre-pay and post-pay calls (separately):

- Average monthly call times for calls which resulted in a successful PAC request and, separately, calls which resulted in a successful termination, between November 2015 and October 2016; and
- Individual call times for all calls which resulted in a successful PAC request and, separately, calls which resulted in a successful termination, for a shorter period between November 2015 and October 2016.

A6.46 We set out summary metrics and our conclusions based on this data in annex 10.

[27] Derived from Figure 100, section 7.3.4 *The SME experience of communications services: research report* January 2017

Consumer research results concerning loss of service experienced by consumers when they switch mobile provider

A6.47 We undertook consumer research - the BDRC omnibus December 2016 - to update our understanding of the incidence of loss of service, and to understand better the form of any loss or interruption to mobile service when consumers switch mobile provider. Questions included consumer perceptions about whether or not they were aware that there may be a period of loss of service when switching, and the possibility of a temporary number, and the form of any loss of service.

A6.48 Figure A6.6. below sets out the incidence of loss of service. We have published the full omnibus results on our website.[28]

Figure A6.6 - Incidence of switchers able / unable to make or receive calls or texts when switching

% *When you switched, did you experience any period of time that you were unable to make or receive calls or text messages?*	Total: All switched in last 18 months	All switched in last 18 months by PAC	All switched in last 18 months by C&R
Base			
Yes I was unable to use my number for a period of time	21%	26%	11%
No I was able to use my number all the time	62%	50%	85%
Don't know / can't recall	17%	23%	4%

Source: BDRC Omnibus December 2016

Updated data on complaints

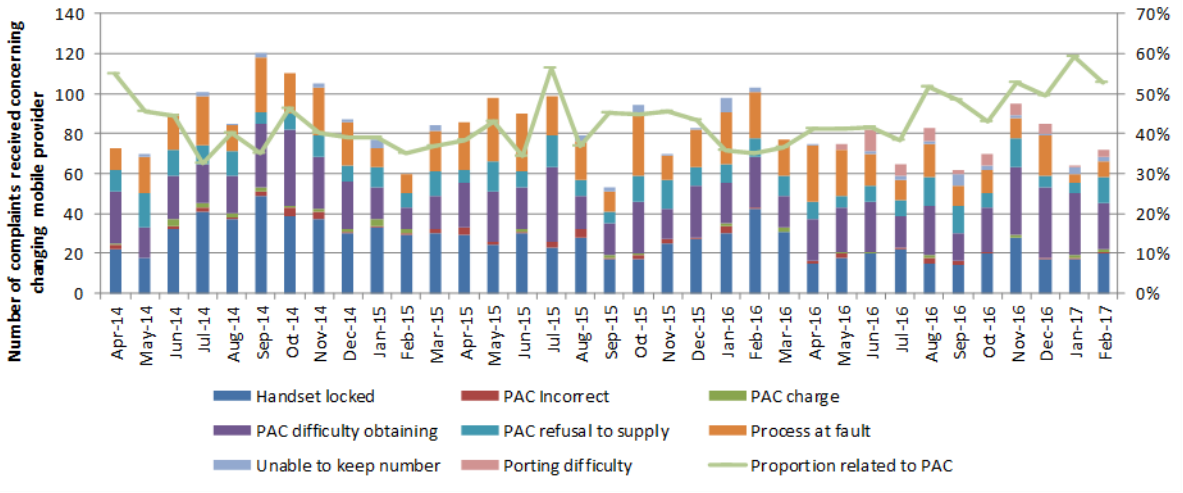
A6.49 We collect data on complaints as part of our regular market monitoring. In our March 2016 consultation we published a chart summarising the volume of complaints received by Ofcom regarding changing mobile provider.[29]

A6.50 We have in Figure A6.7 updated this chart with complaints data to February 2017. Since March 2016 we have identified and introduced a new category of complaint "Porting difficulty".

[28] See: https://www.ofcom.org.uk/__data/assets/pdf_file/0025/101995/Mobile-Switching-Research-2017-Omnibus-data-tables.pdf

[29] March 2016 consultation §A10.67, Figure A10.13

Figure A6.7 - Volume of complaints regarding changing mobile provider, April 2014 to February 2017



A6.51 Over the period April 2014 to February 2017, Ofcom received around 80 complaints per month relating to changing mobile provider. As we noted in March 2016, around 40% of complaints relating to changing mobile provider concerned difficulties in requesting or obtaining the PAC.

Annex 7

Detailed process diagrams

Introduction

A7.1 This annex sets out at a more detailed level proposed process flows which could deliver our proposals for Option 1 (Auto- Switch) and Option 2 (GPL), which we described in section 4. In particular we describe here the process by which a consumer could request and complete a switch under each option and the actions required by the parties involved – the consumer, the Gaining Provider (GP), the Losing Provider (LP) the block operator (BO) and the Central Porting System (CPS).

A7.2 We have sought, in developing these options, to ensure that they can be delivered with minimal changes to and investments in the systems used to provide the current PAC switching process. In particular we consider that the CPS will continue to play a pivotal (and enhanced) role in enabling the necessary exchange of data between gaining provider, losing provider and the consumer.

Process flow diagrams

A7.3 We set out in the following figures schematics of the interactions between the consumer, gaining provider, losing provider,block operator and CPS that we think will be needed to deliver the switching features set out in section 4.

A7.4 We would note that the Auto-Switch diagrams are based on the losing provider variant. They do not depict the CPS variant as described in the costs annex.

A7.5 The figures relate to the options and option features as follows:

Option 1 - Auto-Switch	Auto- Switch (PAC and port process triggered by SIM activation)	A7.1
	Auto- Switch (PAC with port process triggered by contacting gaining provider)	A7.2
	Auto- Switch (N-PAC with cancellation process triggered by SIM activation)	A7.3
	Auto- Switch (N-PAC with cancellation process triggered by contacting gaining provider)	A7.4
Option 2 - GPL	Gaining provider led process (Porting number)	A7.5
	Gaining provider led process (Non-porting switch)	A7.6

A7.6 We recognise that in some cases the 'losing provider' and/or 'gaining provider' may comprise more than one party. For example MVNO providers with the retail relationship with the end consumer may enter into wholesale arrangements with an MNO, who may act as an intermediary between the CPS and the MVNO. In these cases we would anticipate that the wholesale and retail providers establish contractual and technical relationships that enable the data flows we have indicated.

Figure A7.1

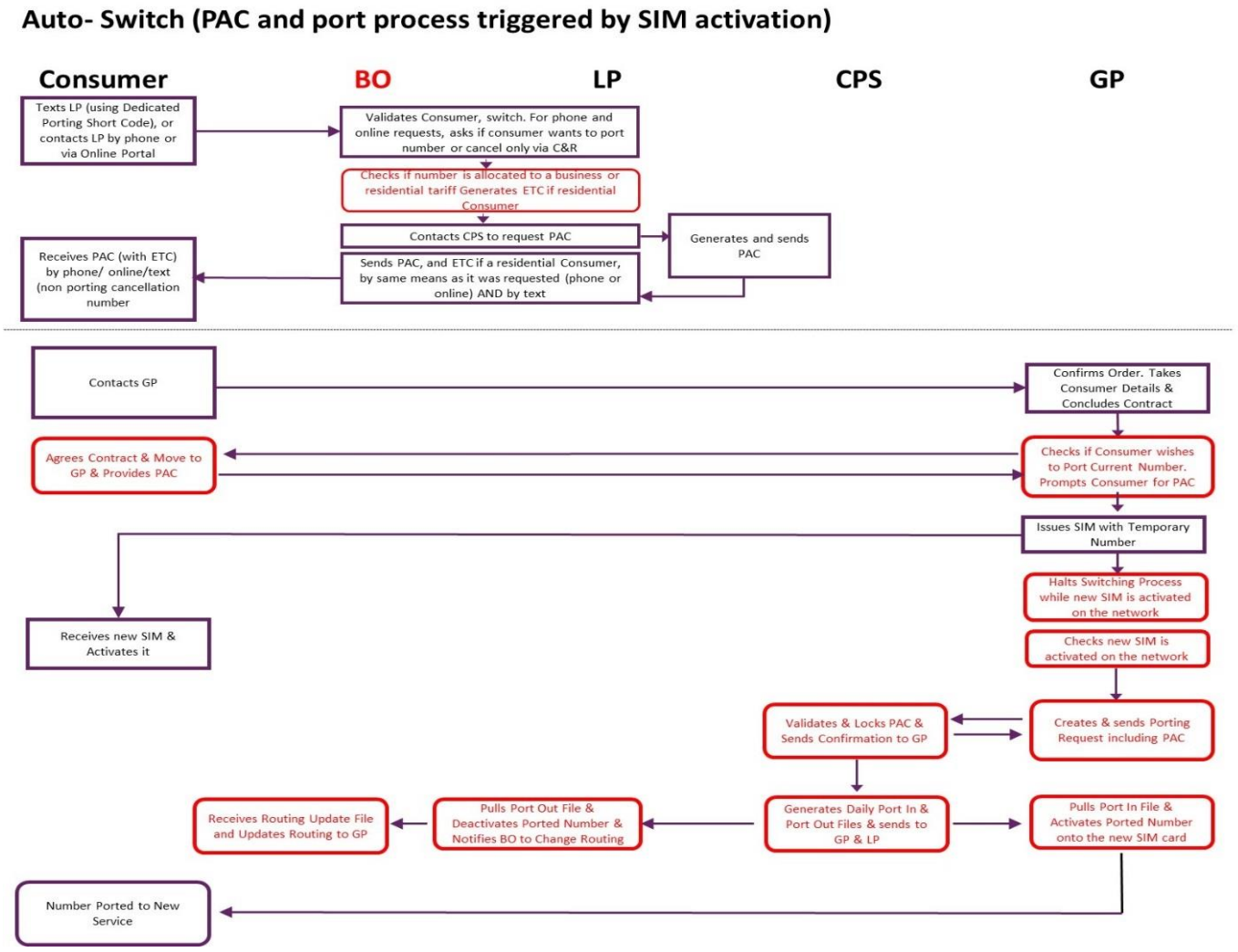

Auto- Switch (PAC and port process triggered by SIM activation)
Consumer
BO
LP
CPS
GP
Texts LP (using Dedicated Porting Short Code), or contacts LP by phone or via Online Portal
Validates Consumer, switch. For phone and online requests, asks if consumer wants to port number or cancel only via C&R
Checks if number is allocated to a business or residential tariff Generates ETC if residential Consumer
Contacts CPS to request PAC
Generates and sends PAC
Receives PAC (with ETC) by phone/ online/text (non porting cancellation number
Sends PAC, and ETC if a residential Consumer, by same means as it was requested (phone or online) AND by text
Contacts GP
Confirms Order. Takes Consumer Details & Concludes Contract
Agrees Contract & Move to GP & Provides PAC
Checks if Consumer wishes to Port Current Number. Prompts Consumer for PAC
Issues SIM with Temporary Number
Halts Switching Process while new SIM is activated on the network
Receives new SIM & Activates it
Checks new SIM is activated on the network
Validates & Locks PAC & Sends Confirmation to GP
Creates & sends Porting Request including PAC
Receives Routing Update File and Updates Routing to GP
Pulls Port Out File & Deactivates Ported Number & Notifies BO to Change Routing
Generates Daily Port In & Port Out Files & sends to GP & LP
Pulls Port In File & Activates Ported Number onto the new SIM card
Number Ported to New Service

Figure A7.2

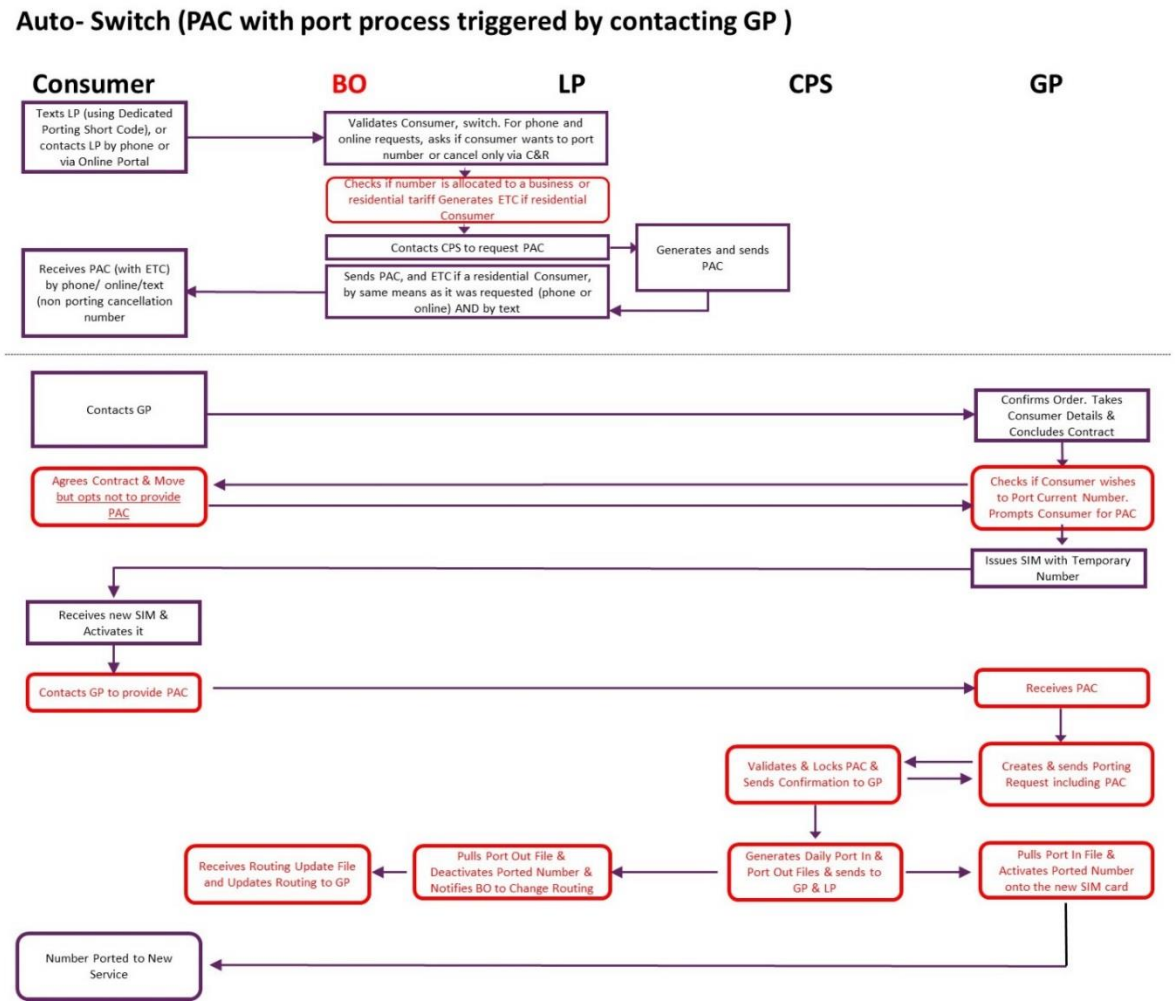

Auto- Switch (PAC with port process triggered by contacting GP)
Consumer
BO
LP
CPS
GP
Texts LP (using Dedicated Porting Short Code), or contacts LP by phone or via Online Portal
Validates Consumer, switch. For phone and online requests, asks if consumer wants to port number or cancel only via C&R
Checks if number is allocated to a business or residential tariff Generates ETC if residential Consumer
Contacts CPS to request PAC
Generates and sends PAC
Receives PAC (with ETC) by phone/ online/text (non porting cancellation number
Sends PAC, and ETC if a residential Consumer, by same means as it was requested (phone or online) AND by text
Contacts GP
Confirms Order. Takes Consumer Details & Concludes Contract
Agrees Contract & Move but opts not to provide PAC
Checks if Consumer wishes to Port Current Number. Prompts Consumer for PAC
Issues SIM with Temporary Number
Receives new SIM & Activates it
Contacts GP to provide PAC
Receives PAC
Validates & Locks PAC & Sends Confirmation to GP
Creates & sends Porting Request including PAC
Receives Routing Update File and Updates Routing to GP
Pulls Port Out File & Deactivates Ported Number & Notifies BO to Change Routing
Generates Daily Port In & Port Out Files & sends to GP & LP
Pulls Port In File & Activates Ported Number onto the new SIM card
Number Ported to New Service

Figure A7.3

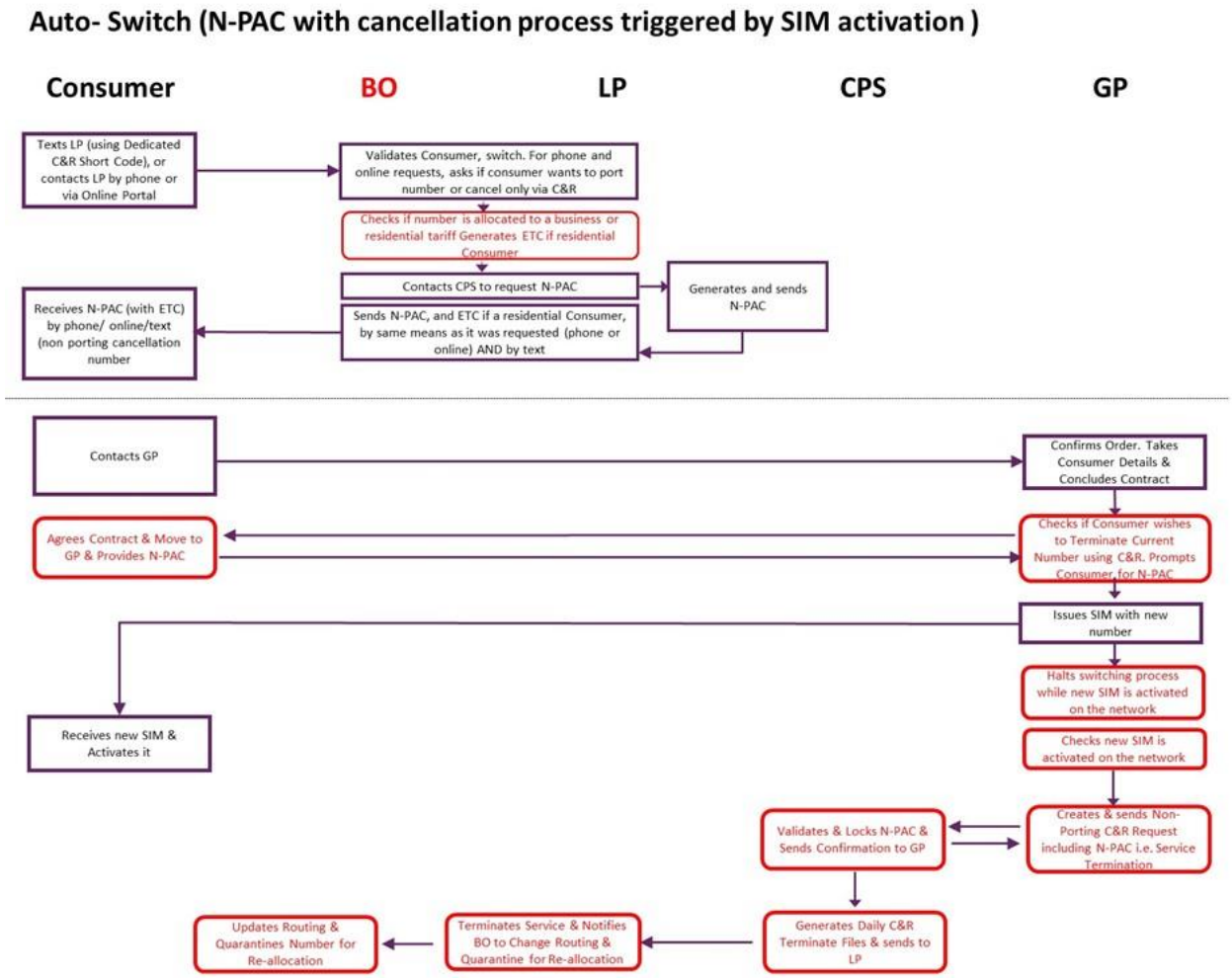

Auto- Switch (N-PAC with cancellation process triggered by SIM activation)
Consumer
BO
LP
CPS
GP
Texts LP (using Dedicated C&R Short Code), or contacts LP by phone or via Online Portal
Validates Consumer, switch. For phone and online requests, asks if consumer wants to port number or cancel only via C&R
Checks if number is allocated to a business or residential tariff Generates ETC if residential Consumer
Contacts CPS to request N-PAC
Generates and sends N-PAC
Receives N-PAC (with ETC) by phone/ online/text (non porting cancellation number
Sends N-PAC, and ETC if a residential Consumer, by same means as it was requested (phone or online) AND by text
Contacts GP
Confirms Order. Takes Consumer Details & Concludes Contract
Agrees Contract & Move to GP & Provides N-PAC
Checks if Consumer wishes to Terminate Current Number using C&R. Prompts Consumer for N-PAC
Issues SIM with new number
Halts switching process while new SIM is activated on the network
Receives new SIM & Activates it
Checks new SIM is activated on the network
Validates & Locks N-PAC & Sends Confirmation to GP
Creates & sends Non-Porting C&R Request including N-PAC i.e. Service Termination
Updates Routing & Quarantines Number for Re-allocation
Terminates Service & Notifies BO to Change Routing & Quarantine for Re-allocation
Generates Daily C&R Terminate Files & sends to LP

Figure A7.4

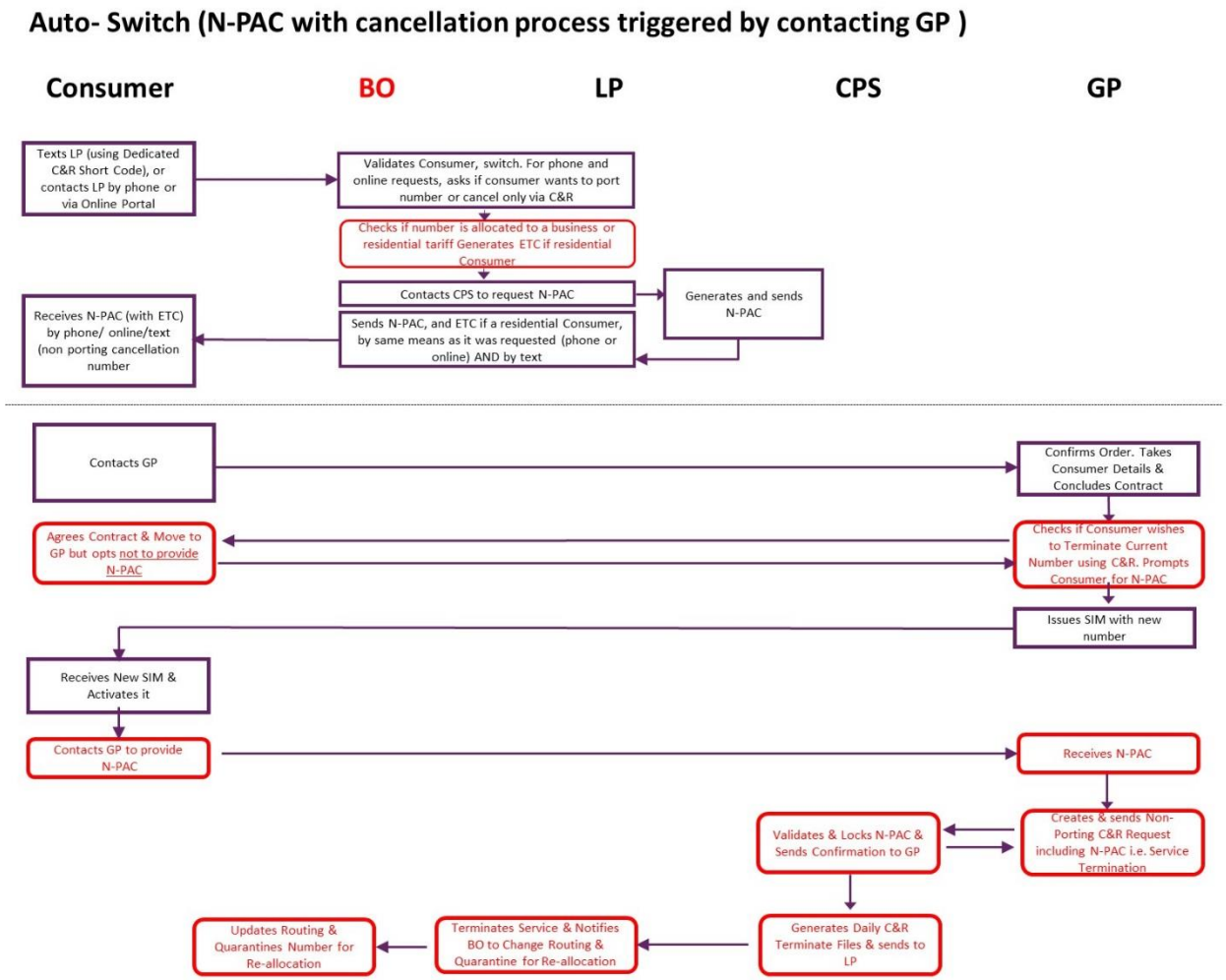

Auto- Switch (N-PAC with cancellation process triggered by contacting GP)
Consumer
BO
LP
CPS
GP
Texts LP (using Dedicated C&R Short Code), or contacts LP by phone or via Online Portal
Validates Consumer, switch. For phone and online requests, asks if consumer wants to port number or cancel only via C&R
Checks if number is allocated to a business or residential tariff Generates ETC if residential Consumer
Contacts CPS to request N-PAC
Generates and sends N-PAC
Receives N-PAC (with ETC) by phone/ online/text (non porting cancellation number
Sends N-PAC, and ETC if a residential Consumer, by same means as it was requested (phone or online) AND by text
Contacts GP
Confirms Order. Takes Consumer Details & Concludes Contract
Agrees Contract & Move to GP but opts not to provide N-PAC
Checks if Consumer wishes to Terminate Current Number using C&R. Prompts Consumer for N-PAC
Issues SIM with new number
Receives New SIM & Activates it
Contacts GP to provide N-PAC
Receives N-PAC
Validates & Locks N-PAC & Sends Confirmation to GP
Creates & sends Non-Porting C&R Request including N-PAC i.e. Service Termination
Updates Routing & Quarantines Number for Re-allocation
Terminates Service & Notifies BO to Change Routing & Quarantine for Re-allocation
Generates Daily C&R Terminate Files & sends to LP

Figure A7.5

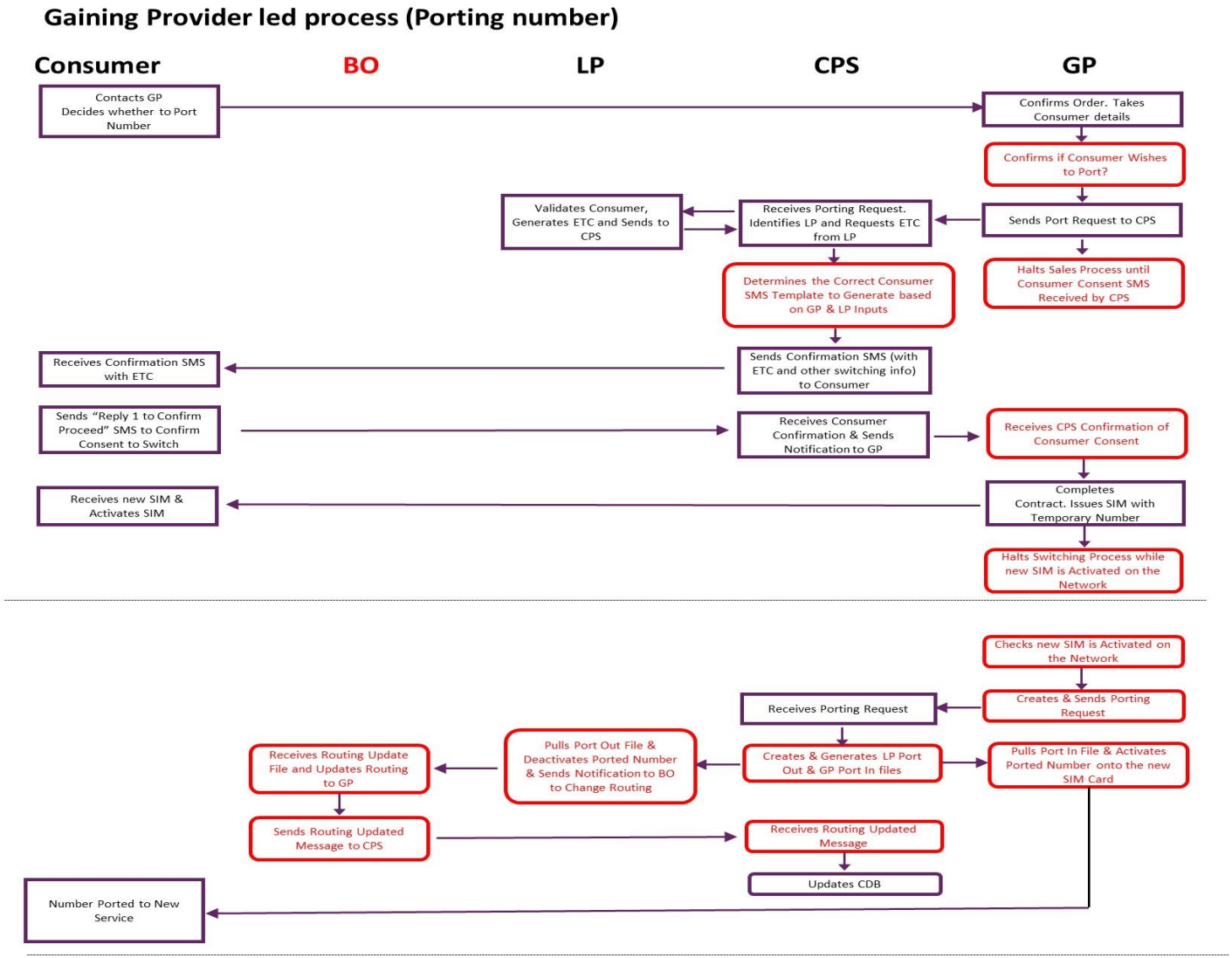
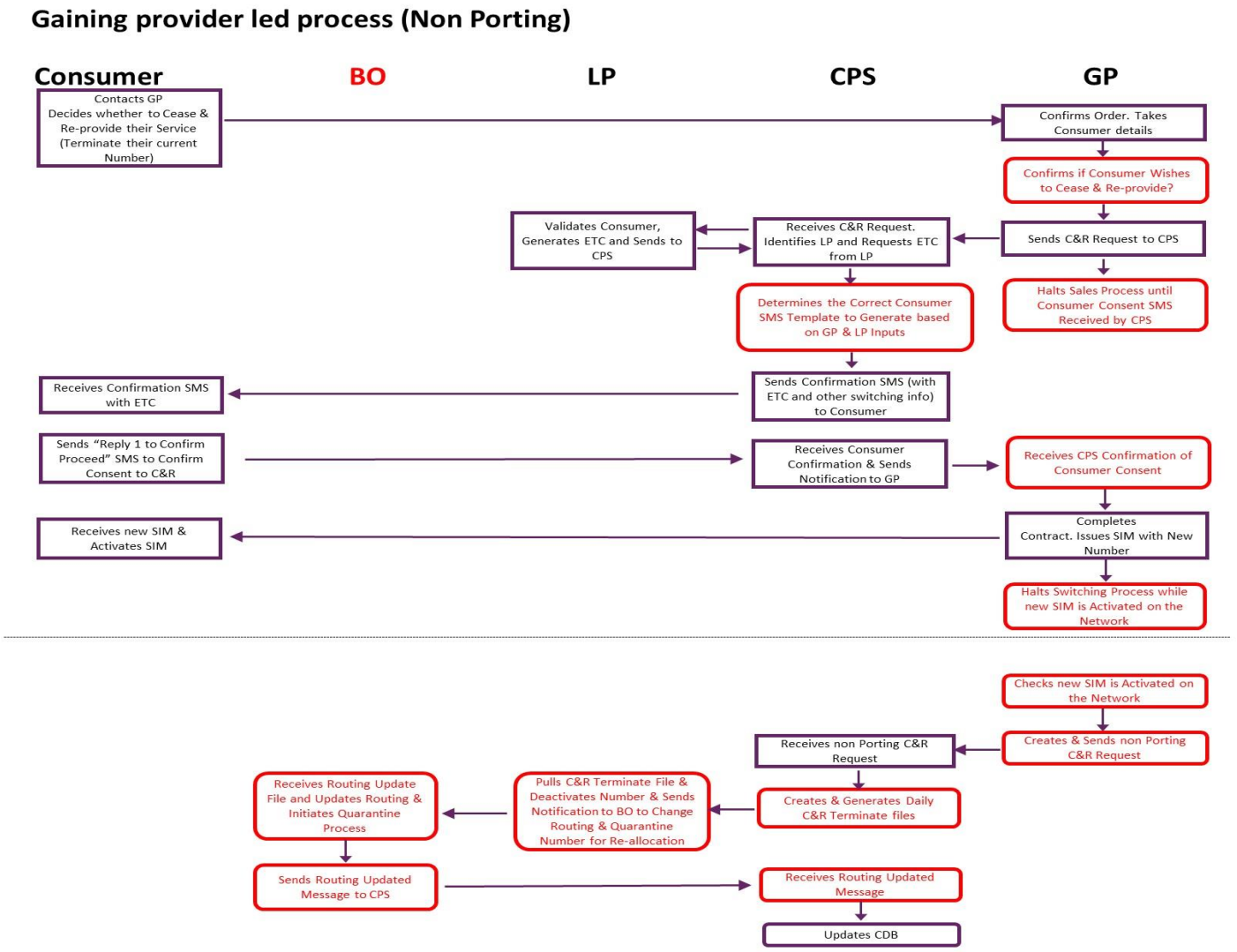

Gaining Provider led process (Porting number)
Consumer
BO
LP
CPS
GP
Contacts GP Decides whether to Port Number
Confirms Order. Takes Consumer details
Confirms if Consumer Wishes to Port?
Sends Port Request to CPS
Halts Sales Process until Consumer Consent SMS Received by CPS
Receives Porting Request. Identifies LP and Requests ETC from LP
Validates Consumer, Generates ETC and Sends to CPS
Determines the Correct Consumer SMS Template to Generate based on GP & LP Inputs
Sends Confirmation SMS (with ETC and other switching info) to Consumer
Receives Confirmation SMS with ETC
Sends "Reply 1 to Confirm Proceed" SMS to Confirm Consent to Switch
Receives Consumer Confirmation & Sends Notification to GP
Receives CPS Confirmation of Consumer Consent
Completes Contract. Issues SIM with Temporary Number
Receives new SIM & Activates SIM
Halts Switching Process while new SIM is Activated on the Network
Checks new SIM is Activated on the Network
Creates & Sends Porting Request
Receives Porting Request
Creates & Generates LP Port Out & GP Port In files
Pulls Port In File & Activates Ported Number onto the new SIM Card
Pulls Port Out File & Deactivates Ported Number & Sends Notification to BO to Change Routing
Receives Routing Update File and Updates Routing to GP
Sends Routing Updated Message to CPS
Receives Routing Updated Message
Updates CDB
Number Ported to New Service

Figure A7.6


Gaining provider led process (Non Porting)
Consumer
BO
LP
CPS
GP
Contacts GP Decides whether to Cease & Re-provide their Service (Terminate their current Number)
Confirms Order. Takes Consumer details
Confirms if Consumer Wishes to Cease & Re-provide?
Sends C&R Request to CPS
Halts Sales Process until Consumer Consent SMS Received by CPS
Receives C&R Request. Identifies LP and Requests ETC from LP
Validates Consumer, Generates ETC and Sends to CPS
Determines the Correct Consumer SMS Template to Generate based on GP & LP Inputs
Sends Confirmation SMS (with ETC and other switching info) to Consumer
Receives Confirmation SMS with ETC
Sends "Reply 1 to Confirm Proceed" SMS to Confirm Consent to C&R
Receives Consumer Confirmation & Sends Notification to GP
Receives CPS Confirmation of Consumer Consent
Completes Contract. Issues SIM with New Number
Receives new SIM & Activates SIM
Halts Switching Process while new SIM is Activated on the Network
Checks new SIM is Activated on the Network
Creates & Sends non Porting C&R Request
Receives non Porting C&R Request
Creates & Generates Daily C&R Terminate files
Pulls C&R Terminate File & Deactivates Number & Sends Notification to BO to Change Routing & Quarantine Number for Re-allocation
Receives Routing Update File and Updates Routing & Initiates Quarantine Process
Sends Routing Updated Message to CPS
Receives Routing Updated Message
Updates CDB

Annex 8

Estimated costs of implementation

Introduction

A8.1 This annex sets out how we have estimated the net cost to industry of implementing our options for reform.

A8.2 We presented our estimate of the cost of (our previously termed) Auto-PAC, GPL, End-to-end management and improving consumer guidance for consumers in Annex 8 of our March 2016 consultation. Under our base case, we estimated the net industry cost of these reforms (over ten years) as follows: Auto-PAC: £10.9 million; GPL: £12.4 million; End-to-end management: £13.0 - £28.9 million; and improving consumer guidance for consumers: £5.3 million.[30] In our July 2016 consultation, we estimated that the total industry cost of prohibiting charging for notice after the switching date would be £6.4 million - £7.2 million (over ten years).[31]

A8.3 We received comments from several stakeholders on our assessment of gross costs, and over the autumn of 2016 we discussed our gross cost estimates with the mobile industry. We set out our revised view of gross costs, based on stakeholder comments on the proposed process designs and their associated implementation costs, in an update note in January 2017 (the "January 2017 cost update").[32] Separately, we commissioned an independent consulting company (InterConnect Communications, or ICC) to peer review these estimates.[33]

A8.4 This annex presents our revised view of the net costs to industry, taking account of stakeholder responses to our January 2017 cost update, and comments from our independent peer reviewer. It is structured as follows:

- Firstly, we set out our high-level approach to estimating costs. This covers assumptions that are relevant to the costs of all reforms (e.g. the value chain that we have modelled).
- Secondly, for each reform, we summarise the changes that we have made to specific cost categories. We then present our revised view on net costs.

A8.5 We have not set out revised cost estimates for End-to-end management in this annex, because we did not receive detailed comments on the costs that we set out in our March 2016 consultation or our January 2017 cost update.

[30] March 2016 consultation, Figures A8.7 and A8.9 and §A8.40
[31] July 2016 consultation, Figure A6.2
[32] https://www.ofcom.org.uk/__data/assets/pdf_file/0033/97179/Consumer-switching-Proposals-to-reform-switching-of-mobile-communications-services-Revised-cost-estimates.pdf
[33] ICC's report is published alongside our consultation: https://www.ofcom.org.uk/__data/assets/pdf_file/0024/101994/ICC-report-on-cost-estimates.pdf

Approach to estimating costs

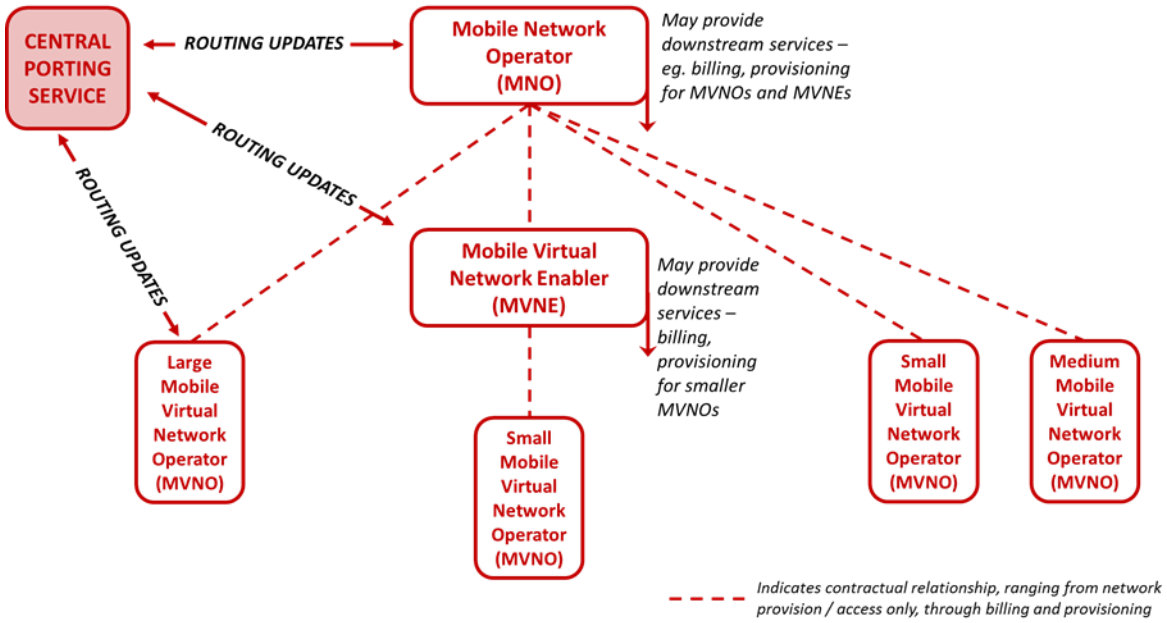
Value chain

A8.6 In our March 2016 consultation, we assumed that 68 mobile providers would be required to make investments to implement the proposed mobile switching reforms, split in the following way: 4 MNOs, 15 large MVNOs, 16 medium MVNOs and 33 small MVNOs.[34] We assumed that providers in each category would be required to make similar changes to their own systems, though the complexity and cost of these changes decreased with the size of the provider. We also assumed that, for Auto-PAC, GPL and End-to-end management, mobile providers would be required to bear the costs of establishing a Central Porting Service (CPS) with an up-to-date ported number database.

A8.7 In response to the March 2016 consultation, [✂] said that we had significantly underestimated the long tail of smaller mobile providers who would be required to make changes to comply with our proposed reforms.[35] All other things equal, including these providers would increase the total industry cost of implementing our reforms. At the same time, we also understand that there are a number of Mobile Virtual Network Enablers (MVNEs) which supply these smaller providers with a large amount of the routing, billing and provisioning systems that would be affected by our reforms, and would therefore be expected to make changes on behalf of their small MVNOs.

A8.8 In light of this, for the purposes of estimating implementation costs, we have since adopted the simplified value chain set out in Figure A8.1.

Figure A8.1: Simplified mobile value chain



[34] March 2016 consultation, §A8.28
[35] [✂] response to March 2016 consultation, page [✂]

A8.9 We have estimated costs for:

- 4 MNOs: There are 4 mobile network operators in the UK, which have their own OSS/BSS systems and perform switching, billing and provisioning functions themselves. We assume that MNOs also provide outsourced management of network routing, billing and provisioning to smaller MVNOs which do not have the scale to develop their own OSS/BSS systems,[36] and would therefore make changes on their behalf.

- 11 large MVNOs: These providers purchase wholesale network services from an MNO with network infrastructure, but they still all operate their own OSS/BSS systems. As such, we have assumed that large MVNOs would be required to make broadly the same changes as MNOs, though the development effort required is smaller (to reflect the smaller scale and complexity of systems, and the absence of legacy platforms).

- 6 medium MVNOs: These providers are sufficiently large to have their OSS/BSS systems, and would therefore be required to make broadly the same changes as MNOs and large MVNOs, though the development effort required is again lower.

- 8 MVNEs: These entities provide outsourced management of network routing, billing and provisioning to smaller MVNOs which do not have the scale to develop their own OSS/BSS systems, and would therefore be expected to make changes on behalf of their smaller MVNOs. We have assumed that MVNEs are similar in scale to medium MVNOs, but do not have any retail relationships with end users. The presence of MVNEs means that industry costs would be lower than if all small MVNOs had to incur the costs of making duplicative changes to their systems (as explained below).

- 232 small MVNOs (of which 163 serve only business customers). We have derived this number by obtaining a list of MVNOs and MVNEs served by each MNO's network, and a list of MVNOs served by each MVNE. As set out above, these MVNOs often use MNOs or MVNEs to provide them with management of network routing, billing functions and provisioning on an outsourced basis. We recognise that there is significant variety in the precise nature of the relationship that each small MVNO has with its upstream MNO / MVNE, with some smaller MVNOs performing some of these functions themselves. For the purposes of estimating costs, though, we have assumed that these entities have limited OSS/BSS systems themselves, meaning that most of the costs of our reforms would be incurred on their behalf by MNOs or MVNEs. Smaller MVNOs' cost liabilities would be confined largely to providing support for testing and project management functions, as well as employee training.

A8.10 Under our Auto-Switch and GPL proposals, one of the major cost activities is developing the functionality required to generate real-time ETC information. Here, we recognise that MNOs and MVNEs do not generally have the required visibility of smaller MVNOs' retail information to be able to generate and deliver this information on their behalf. Accordingly, we have assumed that smaller MVNOs would provide their MVNE with the necessary account details (contract start date, contract duration, and monthly airtime charge including handset if applicable) for each customer, and keep this information updated, so that the MVNE can calculate this

[36] Operations Support Systems and Business Support Systems

information on their behalf. We discuss this in more detail in paragraphs A8.54 to A8.55.

A8.11 In addition, for the GPL proposal:[37]

- We assume that there will be costs associated with expanding the role of the **Central Porting Service** ("CPS"). These costs will also be borne by mobile providers. However, for the purposes of clarity, we have distinguished between CPS-related costs from costs related to MNOs' and MVNOs' own system developments.

- We assume that all MNOs, 6 large MVNOs and 6 MVNEs will fulfil a function as **routing operators.**[38] Routing operators would be required to support the initial setup and configuration of the CPS central ported number database. Thereafter, to ensure that this database is kept up to date at all times, they would also be required to notify the CPS once the routing of porting and deactivated numbers is updated to the GP.

A8.12 Finally, for the Auto-Switch and GPL proposals, we have included costs that would be borne by one specialist independent retailer of mobile services ([✂]) that is currently involved in switching mobile consumers.[39]

A8.13 Figure A8.2 summarises our assumptions about the number of mobile providers that would incur costs at each stage of the value chain.

Figure A8.2: Summary of value chain assumptions

	Number	Of which: Also routing operator	Impacted by:
CPS	1	-	*GPL*
MNO	4	4	*Prohibiting charging for notice* *Auto-Switch* *GPL* *Proving clear consumer guidance*
Large MVNO	11	6	
Medium MVNO	6	0	
Small MVNO	*232*	0	

[37] We explain in paragraphs 4.43 to 4.45 of Section 4 that the Auto-Switch process design does not require text-based PAC requests to be sent to / received by the CPS, so we do not consider these CPS-related changes are applicable to Auto-Switch. However, for comparison, we set out in Figures A8.6 and A8.7 the estimated costs of an Auto-Switch variant which requires PAC requests to be directed to the CPS.
[38] We understand from Syniverse that there are 15 routing operators in addition to the 4 MNOs. However, our own analysis suggests that 3 of these are inactive.
[39] We recognise that there are several general independent retailers which are involved in pre-pay handset sales. However, our current understanding is that there is only one large independent specialist retailer which plays an active role in post-pay handset sales as well as pre-pay handset sales, and actively helps customers to switch their services. We consider that the cost impact of our proposals would be limited to this specialist retailer.

(Business-only)	*(163)*		
MVNE	*8*	6	*Prohibiting charging for notice* *Auto-Switch* *GPL*
Specialist independent retailers	*1*	-	*Auto-Switch* *GPL*

Cost components

A8.14 We have taken a similar approach to estimating the net industry cost of each option as in the March 2016 consultation. We assume that our proposals will require mobile providers to incur incremental (one-off) setup costs. We also assume there will be incremental operating costs associated with the new functionality. On the other hand, we consider that operators would make ongoing savings from fewer customers contacting them to request a PAC or terminate their service.

A8.15 Net industry cost is calculated as the sum of incremental setup costs and the difference between incremental operating costs and cost savings, aggregated across all affected entities, and discounted over the relevant time horizon.

Setup costs

A8.16 Where possible, we have used estimates of actual (rather than typical) setup costs. This is where stakeholders have provided us with their own estimates of the cost that they would incur to implement our proposals, or specific reasons why their implementation cost would be significantly different from a typical operator. We received such information from the following providers: [✂] Vodafone and [✂], and we have taken this into account as follows:

- [✂] said that they have three separate billing platforms (for PAYM, PAYG and business) and would incur three separate sets of development costs for certain activities (e.g. the functionality to develop real-time ETC information). [✂] recognised that there could be some common functions that would have a single cost (e.g. setting up SMSC connections). For [✂], therefore, we have tripled the estimated cost of each cost activity that we believe would require separate development on each billing system.[40]

- [✂] submitted that it would initially cost [✂] to implement the CPS-based Auto-Switch variant and [✂] to implement GPL, both in conjunction with prohibiting charging for notice after the switching date.[41] It did not split out the cost of prohibiting charging for notice in this submission. However, [✂ ✂]. For [✂], we have therefore estimated the setup cost for prohibiting charging for notice is [✂], and the incremental setup cost of

[40] In our costs workbook accompanying this consultation, we set out the full list of activities that we consider would be duplicated for each billing platform. Based on our assessment, the overall cost of each reform is around 75% higher than the cost of a typical MNO.

[41] [✂], Updated Mobile Switching Cost Assessment, submitted to Ofcom 14.11.16. This is the sum of programme effort, development, testing, other costs, CPS-related costs, and training.

Auto-Switch / GPL is [✂] (i.e. the difference between its standalone and combined estimates).[42]

- [✂] provided an alternative estimate of the setup cost for the Auto-Switch CPS variant [✂].[43] We subsequently published our revised cost estimate for this option in our January 2017 cost update, which was higher than this estimate. In response to the cost update, [✂] said that [✂ ✂]. As such, we have not adjusted our latest cost estimate to take account of this, but we have used the revised cost estimates for a typical provider.

- Vodafone provided alternative estimates of the cost of the CPS-based Auto-Switch variant and GPL. We subsequently published our revised cost estimate for this option in our January 2017 cost update, taking account of the information provided to us where appropriate. Vodafone said our revised estimates are now a more realistic view of costs, so we have not adjusted our cost estimates further.[44]

- [✂] said that, under GPL, independent retailers would incur costs to build a gateway to retrieve ETC information and trigger the confirmation text to the customer; and change the current activation interface with each operator. It estimated that this would cost [✂], depending on the extent to which current interfaces and infrastructure could be reused. [✂] said that high-level estimates suggest the impact of Auto-Switch would be approximately [✂] of the GPL cost.[45] We have accordingly included these cost estimates in our revised industry cost estimates for Auto-Switch and GPL.

A8.17 Elsewhere, we have modelled the costs of a typical operator on the basis that, absent other information, this is our best estimate of the actual cost that would be incurred by industry.[46] We have not used [✂] own cost estimates as the basis for the cost incurred by other large MVNOs, because we consider that, [✂] costs will not be particularly representative of other MVNOs in this category, and will more closely resemble the costs to an MNO. We note that [✂] own cost estimates for Auto-Switch and GPL are comparable with our estimate of the costs to a typical MNO.

A8.18 We have taken a "bottom-up" approach to estimating set-up costs for a typical operator, as set out in Figure A8.3 below. Each option for reform consists of several Activities, which represent the broad categories of additional functionality that is necessary to implement a reform. For each Activity, we have assumed there needs to be i) an impact assessment to determine scope and requirements of the change; ii) a series of systems or process changes to OSS/BSS systems; iii) a testing phase, to ensure that the changes have been successful and are compatible with existing business systems prior to the new system going live; and iv) project management.

A8.19 We have estimated the cost of each of these sub-activities by assigning an appropriate resource, and estimating the number of development days required to

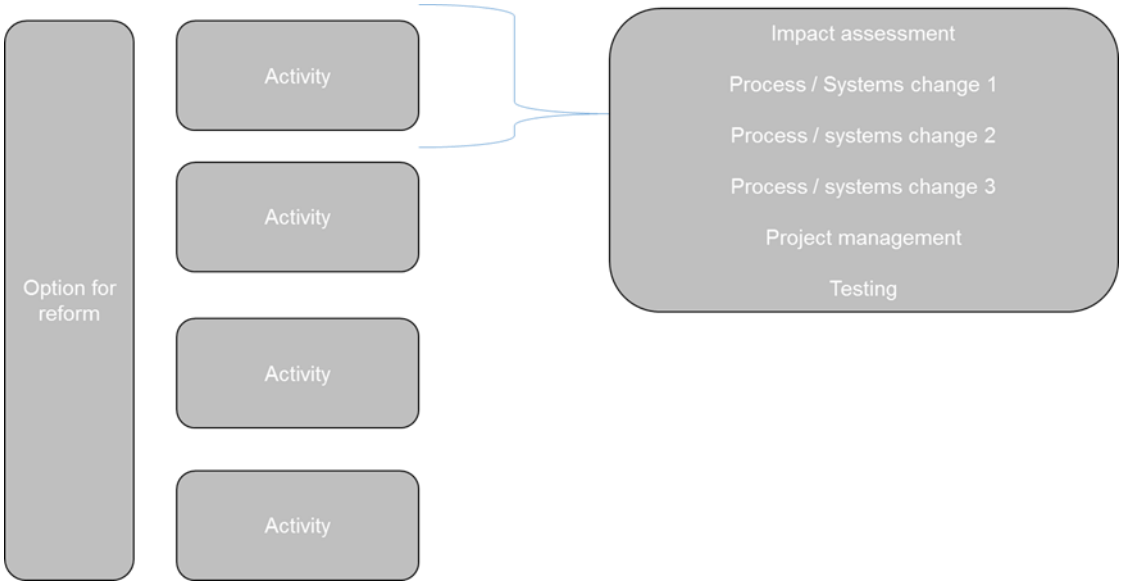
[42] For the Auto-Switch Losing Provider variant, we have used [✂] cost of the Auto-PAC CPS variant, excluding costs associated with the CPS, [✂].
[43] [✂], submitted to Ofcom 15.11.16
[44] Vodafone response to January 2017 cost update, page 6
[45] [✂] response to January 2017 cost update, page [✂]
[46] Recognising the variety in complexity of IT systems among different mobile providers.

complete the sub-activity. We set out our development day assumptions in full in the Excel workbook that accompanies this consultation. We have estimated the daily cost of relevant resources as follows:

- Internal resource: Salary assumptions are based on stakeholder comments from [✂] received as part of our discussions with stakeholders during Autumn 2016. The daily cost is calculated by applying a 60% uplift on salaries to take account of other employee costs such as pensions.

- External resource: We assume a day rate of £750 for external vendor development work, based on stakeholder comments from [✂]. We have cross-checked this with submissions from [✂], in relation to our ongoing work on Triple-play switching processes, about the daily cost of external resource for similar work.

Figure A8.3: Illustration of bottom-up cost approach



Training costs

A8.20 We have assumed that each option requires providers to incur one-off training costs to ensure that employees can understand how the new processes affect their roles. We did not previously include training costs in our March 2016 consultation. Stakeholders made the following comments on the inclusion of these costs:

- [✂] questioned whether training costs are truly incremental, as operators and retailers currently manage switching customers and so presumably currently train staff on the processes and procedures involved. Our view is that moving to Auto-Switch or GPL would in general require providers to hold additional training sessions, over and above business-as-usual training modules, for existing staff who have already been trained in current processes and procedures. To the extent that providers prioritise this over other training, this still constitutes an opportunity cost that we should consider when assessing the cost impact. As such, we have continued to include training costs for mobile providers in general,

but based on its response we have not included any training costs specifically for [✂].[47]

- Virgin said that there would be an ongoing increase in training costs due to employee churn, and because training would be incorporated within existing recurring training modules.[48] We remain of the view that training is a one-off cost. This is on the basis that operators will need to develop new training materials and inform existing employees about the changes to current systems and policies, but thereafter this would replace pre-existing training modules and become a default training element for new joiners. As such, we consider that there should be no ongoing increase in the training budget.

A8.21 The training cost comprises four elements: i) an impact assessment; ii) preparation of training materials; and the delivery of training, which is split between iii) the training team and iv) the employees being trained, the cost of which we value at employees' hourly salary. The bulk of the training cost relates to Customer Service Agents (CSAs) who assist customers with switching.[49]

A8.22 In terms of the number of CSAs to be trained:

- For MNOs, we have calculated a subscriber-adjusted average based on actual information from a subset of MNOs (16,250 CSAs).[50] This includes CSAs directly involved in switching, as well as other agents (e.g. retail or sales agents) that stakeholders told us would need to be made aware of changes.[51]

- For large and small MVNOs, we have based our assumption (4,000 and 20 CSAs respectively) on stakeholder comments. For medium MVNOs, we have made an assumption based on their relative size (500 CSAs).

A8.23 In terms of the number of hours' training required per CSA, we assumed in our January 2017 cost update that this would be two hours' training for Auto-Switch and GPL, and one hour for prohibiting charging for notice after the switching date. In relation to this:

- Vodafone said that CSAs who are directly involved in the switching process would require two hours training about Auto-Switch / GPL, while other CSAs would require a 20-minute briefing.[52]

- [✂] said that CSAs are trained about relatively simple changes through briefing sessions, while more significant changes rely on classroom-based training, usually lasting two hours. Changes to retail agents' roles would be communicated with store managers briefing the store team.[53]

[47] [✂] response to January 2017 cost update, page [✂]
[48] Virgin response to July 2016 consultation, page 25
[49] We have also assumed some training cost for IT engineers and billing administrators.
[50] [✂] collectively have [✂] CSAs and a [✂] share of MNO mobile subscribers. Assuming a constant ratio of CSAs to subscribers for the other MNOs, this implies that the total number of CSAs employed by MNOs is 65,000, or 16,250 on average.
[51] This takes account of EE's point that, for some CPs, the population of advisers dealing with mobile may also include broadband and telephony CSAs, increasing the cost of training. EE response to January 2017 cost update, page 8.
[52] Vodafone Provisional response to detailed operator cost model, submitted 21 October 2016
[53] [✂] submission to Ofcom, 16 December 2016

- [✂] said that both CSAs and sales agents would require 5 hours training to understand the Auto-Switch or GPL processes in conjunction with changes to notice period policies.[54]

- [✂] said that savings could be made by adopting the latest best-practice training methods such as 20-minute e-learning modules, which can be made for c.£10-15k and replace a day of off-site training.[55]

- [✂] said that "such a process change (whichever process is chosen) is not significant and wouldn't be costly for a small MVNO".[56]

A8.24 The feedback from Vodafone and [✂] suggests that two hours' training for Auto-Switch and GPL is a reasonable assumption for CSAs directly involved in switching, but that other agents would require a briefing of around 20 minutes. This is consistent with [✂] view that 20-minute e-learning modules would be sufficient. On the other hand, [✂] said that all agents (both customer support and sales) would require a much longer training period.

A8.25 In light of these views, we consider it is reasonable to maintain our assumption that all CSAs directly involved in switching would undergo two hours' classroom-based training for Auto-Switch and GPL. However, we now consider that "other" CSAs would require less training (i.e. 20 minutes), as they would only need to be made aware of the changes. Based on the ratio of the number of CSAs in each group, which is roughly 2:1 among stakeholders who submitted information, this works out at an overall average of 1.4 hours per CSA for Auto-Switch and GPL.

A8.26 We also consider that a 20-minute briefing would be sufficient for all CSAs to understand the implications of prohibiting charging notice after the switching date.

A8.27 We have summarised our assumptions in Figure A8.4 below. We note that these assumptions apply to a typical provider; for [✂] itself, we have included the training cost that it said it would incur (i.e. 5 hours' training per CSA).

Figure A8.4: CSA training cost assumptions for a typical provider

	Number of CSAs	Number of hours training per CSA		
		Prohibiting charging for notice	Auto-Switch	GPL
CPS	0	N/A	N/A	N/A
MNO	16,250	0.33	1.4	1.4
Large MVNO	4,000	0.33	1.4	1.4
Medium MVNO	500	0.33	1.4	1.4

[54] [✂], Updated Mobile Switching Cost Assessment, submitted 14.11.16
[55] [✂] response to January 2017 cost update, page [✂]
[56] [✂] response to January 2017 cost update, page [✂]

MVNE	0	N/A	N/A	N/A
Small MVNO	20	0.33	1.4	1.4

A8.28 Finally, we have assumed that one trainer can train 12 employees at any given time, so the FTE training team resource allocated to training delivery is one twelfth of the total training time incurred by all employees.[57]

A8.29 Overall, training costs comprise around 14% of the total gross cost of Auto-Switch and around 17% of the total gross cost of GPL. The proportion is higher for GPL because we assume there would be additional training for employees to understand the implications of a more centrally managed repatriations process for fraudulent and inactive numbers (which we consider to be necessary under GPL, to ensure the central ported number database is accurate at all times).[58]

Ongoing costs

A8.30 We have estimated annual operating costs by applying a 15% ratio to the setup costs for cost activities which we consider are likely to attract additional ongoing support costs i.e. process and systems changes to OSS/BSS systems, which generally rely on external vendor support. We have assumed that internal impact assessments, testing and project management resources do not require annual operating costs, as these are one-off changes. We have also assumed that training is a one-off cost, for the reasons explained above.

A8.31 We note that we assumed an ongoing support cost ratio of 20% in our July 2016 consultation on changes to the cross-platform switching process for landline, broadband and pay-TV services.[59] We consider that a 20% ratio is more appropriate in circumstances where new systems and hardware is being installed, which would require a new maintenance contract with a vendor. Here, we are generally assessing the impact of making changes to existing OSS/BSS systems which should already have support processes in place, so we are only interested in the incremental increase in ongoing costs. We consider that 15% is sufficient to reflect this increase.[60]

Cost savings

A8.32 In the March 2016 consultation, we assumed that our (previously termed) Auto-PAC and GPL proposals would deliver costs savings for mobile providers, by lowering the number of customers contacting them to request a PAC or terminate their service. Several stakeholders said that our assessment of cost savings did not account for increases in proactive save activity that would results from our proposals:

[57] In our January 2017 cost update, we calibrated training team resources using the assumption that one trainer can train approximately 10-15 employees at any given time. We understand that the current repatriations process does not necessarily involve the CPS.
[58] We assume an additional one hour for CSAs and four hours for IT engineers.
[59] Page 17, https://www.ofcom.org.uk/__data/assets/pdf_file/0018/72018/cartesian-report.pdf
[60] However, we have used a 20% ratio for ongoing CPS costs, as the changes to the CPS would result in new systems and hardware.

- Virgin said that some customer service agents who currently support PAC requests may need to be redeployed in outbound and pro-active customer service roles, and that the number of staff required to offer an equivalent quality of service will need to rise, as agents spend more time attempting to contact customers rather than awaiting inbound calls.[61]

- O2 said that, under GPL, providers would transfer current inbound retention agents to outbound retention and acquisition activity, and that the net impact would be an increase in resource requirements.[62]

- Vodafone said that to establish the cost savings of moving to Auto-Switch, it would only be appropriate to remove the call time associated with obtaining the PAC code, as retention activity would still occur in some form.[63]

A8.33 We explain in paragraph 5.74 of Section 5 why we remain of the view that it is appropriate to include provider cost savings from fewer calls made to the losing provider. Here we set out the basis for our calculation of cost savings. We assume that total staff cost savings are equal to the number of avoided call / webchat to each losing provider, multiplied by the losing provider's cost per call / webchat (which is calculated by multiplying average CSA cost per hour by the average call / webchat duration in hours).[64]

Number of avoided calls / webchats

A8.34 This is equivalent to the number of switchers who no longer contact their losing provider, as set out in Figure A.10.7 of Annex 10. Under our base case, we estimate that this is 1.57 million per year under Auto-Switch and 1.06 million per year under GPL.

Customer Service Agent (CSA) cost per hour

A8.35 In our March 2016 consultation, we assumed an hourly staff cost of £11.38. This was based on information from operators about the costs they incur in employing CSAs to handle PAC and termination requests.[65] It is inclusive of salaries, rewards, bonuses, pension, national insurance contributions and other benefits, but excludes any overhead apportionment. It is also weighted to reflect different levels of seniority of agent, and the split between UK-based agents and overseas agents.

A8.36 We have continued to use this information for our estimate of staff costs. However, based on stakeholder feedback, we now assume there are 228 (rather than 220) working days per year. This has led to a slight reduction in the hourly staff cost, to £10.98 per hour. We note that this information is from the 2014/15 FY, so would underestimate staff costs in 2017 prices if there has been wage growth since 2015. As such, we consider this to be a conservative estimate of the hourly cost.

[61] Virgin response to March 2016 consultation, page 21
[62] O2 response to March 2016 consultation, page 14
[63] Vodafone response to January 2017 cost update, page 10
[64] March 2016 consultation, §A8.12
[65] March 2016 consultation, Figure A8.6

Time saved per call

A8.37 In our March 2016 consultation, we set out the components of a PAC request or termination call that involve CSA time, and which are therefore relevant from the perspective of cost savings. [66] This is equivalent to components (b) and (d) to (f) in Figure A8.5 below. We have updated our estimate of the time taken to traverse these components as follows:

- We have obtained new information from operators about the time taken to complete step (b) (i.e. the time spent speaking to the switcher). As set out in footnote 144 in Annex 10, we estimate that these steps take 6.2 minutes for a PAC request and 5.9 minutes for a termination.

- We also assume that customer service agents spend time carrying out post-call activity (which is captured in (d) to (f) of Figure A8.5 below). Based on information available to us, we assume this takes around 18% of the actual conversation time, across PAC requests and terminations. Accordingly, we uplift mobile providers' time saving per avoided call by this amount.[67]

A8.38 Under GPL, we recognise that the gaining provider is required to confirm whether or not the customer wishes to switch service, organise for a text to be sent to them asking them to confirm their intention to switch, and receive the confirmation from the switcher. These steps between consumer and gaining provider do not occur under the current switching process, and so must be factored into the costs in our impact assessment. We estimate that these steps will take an additional 3 minutes (as set out in paragraph A10.43), which must be subtracted from the time saving per avoided call under GPL.

A8.39 Vodafone said that this additional time relates to 100% of switchers who would all face a shift to GPL, rather than just those switchers who will no longer call their losing provider.[68] We explain in paragraph A10.40 why we do not count a time dissaving for switchers who still call their losing provider under GPL.

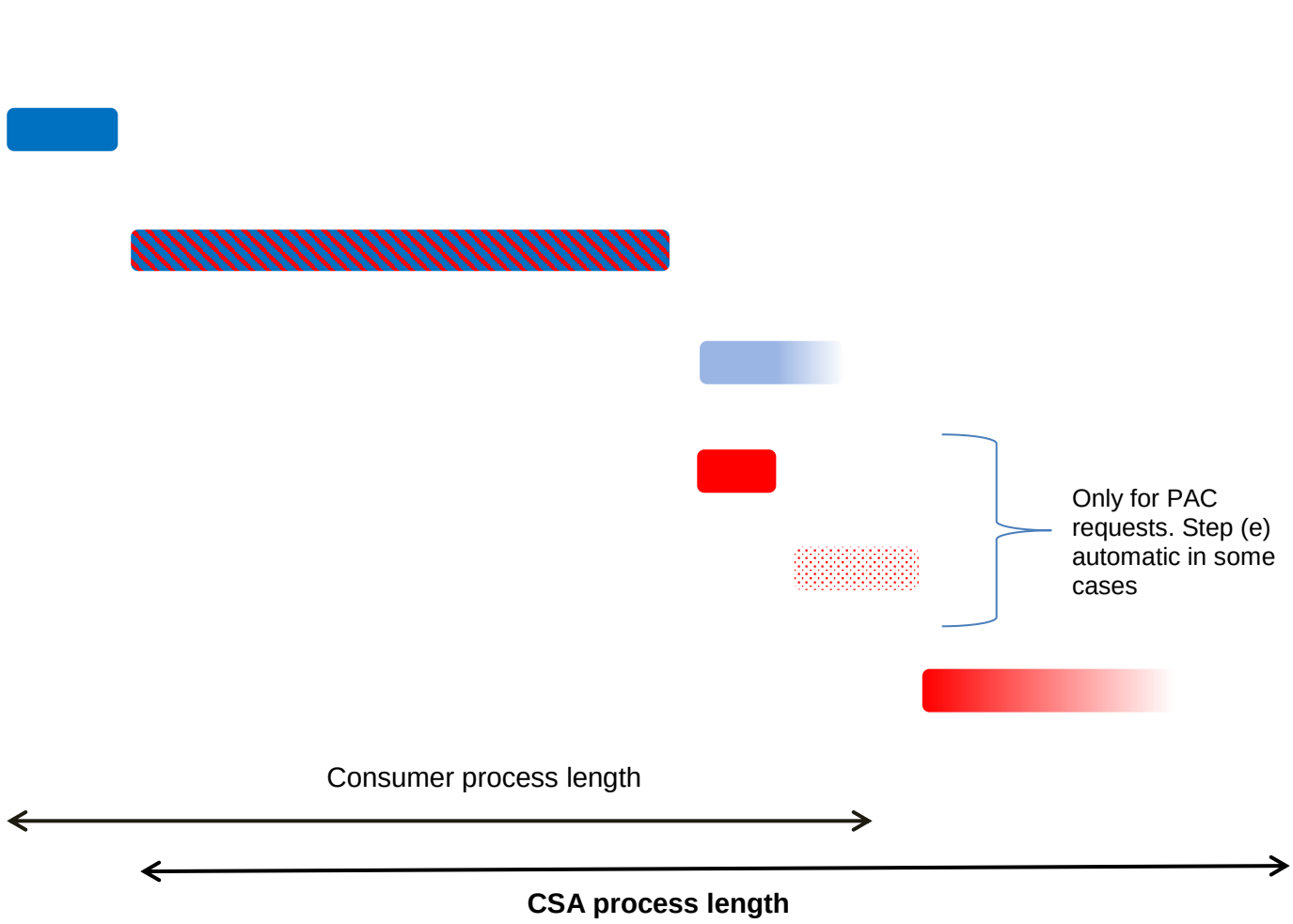
A8.40 On the other hand, [✂] said that moving to GPL (and abolishing PACs) could lead to additional cost savings associated with reduced complaints, compensation claims, resource involved in investigating and resolving PAC issues. It noted that resolving PAC issues invariably involves contacting both gaining and losing providers, and can take up to several hours to resolve.[69] While we recognise that moving to GPL would eliminate specific errors in passing PACs to the consumer, we consider that changes to the back-end porting process (e.g. End-to-end management) would be required for there to be a material fall in porting errors. As such, we have not quantified any additional cost savings under GPL.

A8.41 Overall, therefore, we estimate that the total time saved per call / webchat to the losing provider is 7.3 minutes (PAC request) and 7.0 minutes (termination) under Auto-Switch, and 4.3 minutes / 4.0 minutes respectively under GPL.

[66] March 2016 consultation, Figure A8.5
[67] This is known as 'wrap time'
[68] Vodafone response to March 2016 consultation, page 48
[69] [✂] response to January 2017 cost update, page [✂]

Figure A8.5: PAC request process flow for consumers and customer service agents (CSAs)

Step	Description
a)	Call losing provider and navigate IVR
b)	Conversation between consumer and CSA
c)	Complete quality assessment IVR
d)	Request PAC from CPS
e)	Provide the PAC to the consumer by text
f)	Write up consumer call notes and close case



Time horizon

A8.42 As in our March and July 2016 consultations, we have estimated the impact of our reforms over a 10-year time horizon. Total industry cost comprises setup costs (incurred in year 1) and 10 years of operating costs and cost savings.[70] We assume that the number of providers, number of consumers, and industry switching rate are all constant over the period.

A8.43 In our March 2016 consultation, we discounted all costs and benefits at the Social Time Preference Rate (STPR) of 3.5%.[71] We tested the impact of using the Spackman discounting approach in our sensitivity analysis.[72] We now consider that it is more appropriate to use the Spackman discounting approach to derive the net present cost (NPC) of each reform, because the cost of implementation would fall on industry while the benefits accrue to consumers. We have applied the Spackman discounting methodology based on a financing cost of 7%.[73] All other things equal, this approach increases the NPC of the reforms.

Net cost of each option for reform

Prohibiting charging for notice after the switching date

Position in July 2016 consultation and January 2017 cost update

A8.44 In our July 2016 consultation, we estimated that the total (undiscounted) cost of prohibiting charging for notice after the switching date was £6.8 million, comprising set-up costs of £3.7 million, and 10-year operational costs of £3.1 million.

A8.45 In our January 2017 cost update, we presented an updated estimate for the cost of prohibiting charging for notice after the switching date (£7.7 million). This estimate reflected our revised view of the mobile value chain, as well as changes to assumptions about the cost of development and support, but it did not take account of stakeholder comments received in response to our July 2016 consultation.[74]

Stakeholder responses to July 2016 consultation and January 2017 cost update

A8.46 We received limited comments on our estimate of the costs associated with implementing a prohibition on charging for notice periods after the switching date. No stakeholder commented specifically on our cost estimates presented in January 2017. In response to our July 2016 consultation, Three said that our industry cost of £7.2 million over ten years appeared to be a reasonable estimate, but noted that without implementation detail it could not comment on this further.[75] On the other

[70] If we assumed that setup costs were incurred in year 0, and discounted all costs (including financing costs) and benefits across years 1 to 10, the NPC of costs would increase slightly while the NPV of consumer benefits would fall slightly. The impact of this on the proportion of probably WTP values needed for quantified benefits to exceed net costs, as set out in Figure 17 of Section 6, would be to increase it to 55%.
[71] Based on HM Treasury guidance: See The Green Book here.
[72] This approach involves discounting all costs (including financing costs as calculated based on a post-tax real WACC of 7%) and benefits at the STPR.
[73] This is the pre-tax real WACC used in our 2015 MCT statement. See §7.46, https://www.ofcom.org.uk/__data/assets/pdf_file/0029/76385/mct_final_statement.pdf
[74] January 2017 cost update, §4.7
[75] Three response to July 2016 consultation

hand, Virgin said that we had substantially underestimated the cost to Virgin to a very substantial degree:[76]

- It estimated that billing systems changes will cost [✂] in external costs. It noted that its billing platform is fully integrated with the CRM platform, the process of switch and notice to leave is fully integrated with the agent displays and provides several journeys for the agent to follow. The proposed changes impacts on multiple 'journeys' (e.g. the termination process and the port out process), each of which triggers the final bill.

- It also estimated a further [✂] would be needed in internal costs, to cover activities such as project management, business analysts, solution design, system integration and business readiness management.

- It estimated that training costs would be [✂], which reflects 30 minutes per year for each CSA dedicated to this training.

Revised position and net cost

A8.47 As set out in paragraph A8.16, we have taken account of actual cost estimates for mobile providers, where they have been presented to us. Since July 2016, we have also updated our view about the number of providers who would be required to make changes, the cost of development and support resources for the necessary systems changes, and training costs. Taking these revisions into account, our estimate of the implementation cost of this proposal has increased to around £9 million (over 10 years in NPC terms).

Auto-Switch and GPL

Position in January 2017 cost update

A8.48 In our January 2017 cost update, we presented gross costs for two variants of Auto-Switch: a "CPS-variant", whereby the consumer texts the CPS to get their PAC, and an "Losing Provider-variant" whereby the consumer texts their losing provider directly for the PAC. We assumed that both variants would require providers to undertake the following activities:

- Setting up SMSC connections to the PAC request short-code.

- Developing the functionality to generate real-time ETC information.

- Delivering this information either to the CPS, or the consumer via text or the online account.

- Inter-operator testing.

- Updating CRM systems to allow cancellations to be initiated.

- Developing the functionality to allow PAC requests via online accounts.

- Redesigning online accounts to present ETC information.

[76] Virgin response to July 2016 consultation, pp. 23-27

- Training (as set out above).

A8.49 We considered that the Auto-Switch CPS variant would require additional changes to be made to the CPS, such as establishing and maintaining an accurate central ported number database, and improving the repatriations process. We also assumed that it would require a cross-industry steering group to be set up to coordinate implementation. On the other hand, it would not require providers to develop the ability to automatically (rather than manually) request a PAC from the CPS, and combine this PAC with the relevant ETC information to send on to the consumer in text format.[77] Overall, we estimated that the gross cost of the Auto-Switch CPS variant was higher than the Auto-Switch losing provider variant – £70.5 million (comprising set-up costs of £40.2 million, and operational costs of £30.3 million), compared to £51.0 million in total (set-up costs of £27.8 million and operational costs of £23.3 million).

A8.50 For both variants of Auto-Switch, we also presented costs under a scenario in which the obligation to provide Auto-Switch is only applicable to consumers purchasing residential products. Industry costs are different under this scenario for two reasons:

- On the one hand, we understood that there are a large number of small MVNOs who only serve business customers and would therefore not have to incur implementation costs. [78] The cost per small MVNO was relatively low (around £70,000) because we assumed that most of the activities necessary to implement Auto-Switch would be incurred on behalf of small MVNOs by their upstream MVNEs (which also serve residential providers, and therefore incur these costs regardless of whether business tariffs are included). In particular, we assumed that MNOs / MVNEs would automate and deliver real-time ETC information for their smaller downstream MVNOs.

- On the other hand, the residential-only scenario would require certain additional costs, such as to ensure the necessary functionality to distinguish between customers on business and residential products, and to reject requests which arise from business accounts.

A8.51 Overall, we estimated that the total industry cost in the “residential-only” scenario was lower. We estimated that total costs for the CPS-based variant would be £62.8 million and total costs for the losing provider-based variant would be £43.2 million.

A8.52 We said that GPL would require providers to make similar changes as our CPS-based Auto-Switch proposal. Additionally, we said that providers would need to make the following GPL-specific changes:[79]

- Adding the functionality required for the gaining provider to identify the appropriate message (depending on whether the consumer wants to port their number or just cancel their old service, or whether they are an existing or new customer); the functionality required to enable the gaining provider to keep open

[77] January 2017 cost update, §2.7
[78] In our January 2017 cost update, we assumed that these providers would still incur certain costs as a result of our proposals, relating to training and (in the case of the Auto-Switch CPS variant) ensuring the central ported number database is accurate at all times. However, as set out in Section 4, we are no longer proposing the CPS-based variant of Auto-Switch. Furthermore, we no longer consider that training costs would be incurred by business-only small MVNOs.
[79] January 2017 cost update, §3.6

an order while waiting for validation of the consumer's CLI (we allow up to 24 hours for this); and the functionality required to automatically initiate a switch request once a customer has activated their new SIM.

- Including a backstop route for consumers who are unable to send or receive texts from the CLI that they want to port.

A8.53 On this basis, we estimated that the gross cost of GPL was higher than either Auto-Switch variant – £80.0 million in total, comprising set-up costs of £44.4 million, and operational costs of £35.6 million.

Value chain assumptions

A8.54 As set out in paragraph A8.10 above, we assumed that most of the activities necessary to implement Auto-Switch and GPL would be undertaken by MNOs or MVNEs, on behalf of their small MVNOs.

A8.55 This assumption applied to the functionality required to generate real-time ETC information. We recognised that MNOs and MVNEs do not generally have the required visibility of smaller MVNOs' retail information to be able to generate and deliver this information on their behalf. Accordingly, we assumed that smaller MVNOs would provide their MVNE with key account details (contract start date, contract duration, and monthly airtime charge) for each customer, and keep this information updated. We assumed this would take billing administrators and junior managers 18 days (per provider) to complete initially, and one day a month thereafter. On this basis, we assumed that MVNEs would be able to fulfil requests for real-time ETC information for customers taking products from their downstream MVNOs.

Stakeholder responses to January 2017 cost update

A8.56 Three noted that the estimated costs have increased for both the Auto-PAC and GPL solution to account for revised Steering Group costs, inter operator testing and training costs, and said that these revised cost estimates appear reasonable.[80] Vodafone said the January 2017 costs are a more realistic estimate with greater levels of detail on work line items and now including previously missed tasks.[81]

A8.57 [✂] provided its own estimates of the number of man days required for each cost activity. For Auto-Switch (losing provider variant), the total number of estimated man days (excluding training) was 1150, compared to our estimate of 837 days for a large MVNO. For the GPL-specific activities, [✂] said that it could not provide an estimate without a solution outlined.

A8.58 Vodafone and [✂] commented specifically on our estimate cost of generating real-time ETC information:

- Vodafone said that we have continued to underestimate the costs associated with the calculation of ETCs, noting "it may be that Ofcom has taken a wider view of average costs across industry although this is not clearly explained. Before fully satisfying ourselves that the model provides a fully accurate

[80] Three response to January 2017 cost update, page 2
[81] Vodafone response to January 2017 cost update, page 6

assessment of our own / industry costs it is necessary to conclude on these points".[82]

- [✂] said that the ETC for a single business switch can cover a number of devices with contractual terms and conditions covering usage requirements and cancellation clauses, making the calculation of the ETC a largely manual exercise with a significantly higher cost that that of providing ETCs for a residential consumer.[83]

A8.59 EE asked how we were accounting for the costs associated with migrating bulk ports to GPL.[84] [✂] also said that we had made no reference to the business requirement for a bulk mobile number port.[85]

A8.60 In terms of the cost relativity between Auto-Switch and GPL, [✂] said that the cost difference between Auto-Switch and GPL isn't significant unless the estimates are highly accurate at a per-operator level. It noted that a variance of ±£50k in the estimated costs for each of the operators results in a £26.2 million swing, and said that, given that the overall difference in cost between the two options is highly sensitive to small changes at an individual level, an appropriate conclusion is that they are broadly similar in cost.[86]

Value chain assumptions

A8.61 Several stakeholders said that providing MVNEs with basic customer information, in order to generate ETC information on behalf of their MVNOs, was not a realistic way of complying with the proposed requirements. They raised the following points:

- Sharing data: [✂] said the MVNE would need to hold significant volumes of extremely valuable customer information such as customer identification, customer contract end dates and product/tariff details. They asked what would happen if their MVNE's systems went down or are hacked. [✂] noted that it would require MVNOs to provide their MVNE, with whom they may compete at the retail level, with sensitive business information (e.g. retail pricing information, which customers are nearing the end of their contract etc.). [✂] said this could create a moral hazard on the part of the MVNE.[87]

- Development costs: [✂] considered that it would be simpler for the small MVNO to generate the real-time ETC information in-house, and deliver it directly. [✂] noted that sharing this information with the MVNE would require IT development work to link the systems together. Similarly, The Phone Co-op said the cost of reorganising customer data within the billing system prior to automation could be onerous, and said a more reasonable approach would be independent communication of the ETC direct from the losing provider to the consumer within a regulated timescale (e.g. by the end of the day).[88]

[82] Vodafone response to January 2017 cost update, page 6
[83] [✂] response to January 2017 cost update, page [✂]
[84] EE response to January 2017 cost update, page 6
[85] [✂] response to January 2017 cost update, page [✂]
[86] [✂] response to January 2017 cost update, page [✂]
[87] [✂] response to March 2016 consultation, pages [✂]
[88] Phone Co-op response to January 2017 cost update, pages 1-2

- Ongoing costs: A number of stakeholders noted that smaller providers would continually have to update this information for new customers, or existing customers who change / upgrade their contract.

- Ensuring compliance: [✂] said that they are unable to verify their MVNE's systems and so risked receiving customer complaints and/or financial penalties if their MVNE provided insufficient or incorrect ETC information in the required time.

- Complexity of multiple MVNEs: The Phone Co-op noted that business customers can have more than one connection on different networks on the same contract, which presents additional challenges to maintaining retail information with the MVNE. It also said that this would limit the contract to just mobile whereas a provider needs the flexibility to develop multiple product contracts.[89]

Revised assessment

A8.62 As explained in paragraph A8.12, we have also taken account of actual cost estimates for mobile providers, where they have been presented to us. We have also added the costs incurred by specialist independent retailers. We have assumed that only one such retailer would make these investments.

A8.63 For Auto-Switch, we have also added the cost for providers to automatically initiate port / cancellation requests upon activation of the new SIM. Previously, this cost was only included in our GPL process. However, as set out in paragraphs 4.43 to 4.35, this now forms part of our Auto-Switch process design.

A8.64 We have compared [✂] detailed estimates with our estimates. [✂] have allocated man days to CPS-related activities (Updating the central ported number database; Notifying the CPS once routing of porting numbers is updated to the gaining provider; Repatriations activities), none of which we consider would be necessary under our revised Auto-Switch Losing Provider variant. It has also allocated man days to establishing a small MVNO porting portal, which we consider is only necessary for MNOs / MVNEs which provide wholesale services for downstream providers. If these man days are removed from [✂] estimate, the overall amount of resource is slightly lower than our estimate.[90]

A8.65 We remain of the view that the estimated cost to MNOs of generating real-time ETC information is a reasonable estimate of the average cost. As set out in Section 4, we have defined an ETC in both a residential and a business context as the sum of the remaining monthly airtime and handset fees, so we do not consider that automating the generation of this specific information would be materially costlier for a business customer.

A8.66 Our proposed reforms do not apply to bulk ports. As explained in paragraph 4.126, we do not consider that Auto-Switch would have any impacts on the existing bulk

[89] Phone Co-op response to January 2017 cost update, pages 1-2

[90] The other individual cost activities where [✂] estimated materially more man days was: Setting up SMSC connections (180 man days, compared to Ofcom's estimate of 51 days); Inter-operator testing (60 man days, compared to 25 days); and the functionality to deliver ETC / credit balance via online account (90 man days, compared to 50 days). In the case of SMSC connections, this is likely to be because it included the functionality to request PAC via online account within this activity, whereas we have included this in a separate activity.

port process. However, we have assumed for the purposes of cost estimates that bulk ports would use the GPL process (i.e. industry would not co-run two different switching processes for non-bulk and bulk ports). Our GPL cost estimates account for the functionality required to process multiple ports / switches (i.e. 2 to 24 accounts), both contiguous and non-contiguous, and so we consider that bulk ports could also be carried out using this functionality. However, we have now included estimated costs for mobile providers to decommission their existing PAC provision and validation process, since this would no longer be required.[91]

A8.67 We note [✂] view that the relativity between Auto-Switch and GPL is sensitive to small changes in assumptions. However, we are confident that GPL will always be more expensive because we consider it is a fundamentally more extensive change to the switching process, which necessarily requires more changes to existing processes than Auto-Switch. No stakeholder has suggested that the specific cost activities we have included for GPL are unnecessary.

Value chain assumptions

A8.68 We are not specifying that small MVNOs must rely on their MVNE to provide ETC information. To the extent that small MVNOs choose to generate real-time ETC information themselves, and deliver this information directly to the CPS or the consumer, we have no objection to this. However, in order to estimate likely and reasonable implementation costs, we are interested in estimating the costs of one reasonable approach that would allow mobile providers to meet the proposed requirement, without having any adverse impacts elsewhere. With this in mind, we have considered stakeholders' arguments below:

- Sharing data: We do not consider that our solution creates data security issues. We have assumed that CLIs would be used for customer identification, rather than any other personal data (such as customer names), so MVNEs would only have visibility of contract start date, end date and monthly airtime fee and any handset fee, for each given CLI. We consider that MVNEs would generally already have systems in place to store this limited information securely and in accordance with relevant statutory requirements. We recognise that there would be a need to declare this, but this could be made possible by making minor changes to customer contract T&Cs (if they don't already contain provision to share data with 3rd parties).[92] Finally, in relation to [✂] argument, we believe that MVNEs which also supply retail mobile services can, and do, put adequate protection measures in place to prevent any conflict of interest.[93]

- Development costs: As set out above, we have estimated the costs of one reasonable approach to generating and delivering real-time ETC information. No stakeholders specifically commented on the cost estimates that we have presented for our assumed solution. To the extent that an alternative solution would be cheaper (e.g. fulfilling this requirement "in-house"), small MVNOs are free to adopt such solution. This would mean our cost estimates would be at risk of overstatement.

[91] We included these costs in our March 2016 consultation, but not in our January 2017 cost update. This is a one-off cost that will only be incurred at the beginning of the process.
[92] We note that many small MVNOs use third party billing vendors and therefore already have adequate measures in place for sharing data.
[93] We note that [✂] already provides retail billing services [✂ ✂], so must have such measures that its MVNOs have confidence in.

- Ongoing costs: We recognise that this method would have ongoing costs by requiring MVNOs to update the customer information that their MVNE holds, and we account for this in our cost estimates (1 day per month for a billing administrator, per provider). We consider that updates could potentially be made more cheaply, if MVNE account management portals are linked to MVNOs' CRM systems.

- Ensuring compliance: We note that small MVNOs generally use an MVNE portal to obtain PACs, and provide them within two hours. In other words, they already rely on their MVNE fulfilling their contractual obligations to remain compliant with our General Conditions in respect of porting.[94] We do not consider an additional requirement around providing ETC information materially changes this position.

- Complexity of multiple MVNEs: We recognise that the solution for which we have estimated costs would result in greater linkages between MVNE(s) and MVNO. However, we believe that the solution would still allow small MVNOs the freedom to offer customers more than one connection on different networks on the same contract, or to switch networks mid contract. We also do not see why allowing MVNEs to generate real-time ETC information, specifically for mobile services, would prevent small MVNOs from offering multi-product contracts to consumers.

A8.69 For the reasons set out above, we still believe that small MVNOs could reasonably comply with our proposed requirements to provide ETC information as part of the PAC (under Auto-Switch) or switching confirmation text (under GPL), by contracting with their MVNE to automate and deliver this information on their behalf. For the purpose of deriving our cost estimates, we therefore continue to assume that small MVNOs' costs would be largely confined to uploading relevant elements of data for each CLI to an MVNE account management portal, and keeping this information updated.

Revised cost estimates

A8.70 Figures A8.6 and A8.7 below summarise our updated view of gross costs, cost savings and net costs. For Auto-Switch, we have presented the following costs:

- The "residential-only" and "residential and business" scenarios. As discussed above in paragraph A8.50, we estimate that the "residential and business" scenario is more expensive because it requires business-only small MVNOs to make necessary changes to comply with the obligation.

- The full text and online process and the text-only variant. Adding the online route adds several incremental cost activities to the costs of Auto-Switch.[95] The text and online variant therefore has higher gross costs than the text-only variant, but it also has higher cost savings because we estimate that more people will use the text and online variant (due to the inclusion of an additional route to obtaining a PAC / N-PAC).

- The Losing Provider-based variant and the CPS-based variant. To be clear, our proposal is that PAC / N-PAC requests are sent to and received by the losing

[94] GC 18.2

[95] These are: Developing PAC request functionality via online account; Developing functionality to deliver ETC and credit balance information via online account; Redesign online account to present ETC and credit balance information. The costs of these are set out in our cost model.

provider. Here, we set out the costs of a CPS-based variant purely for comparison. As discussed above in paragraph A8.49, we estimate that the CPS-based variant is more expensive as it requires the CPS to make changes (e.g. developing and maintaining an up-to-date central ported number database).[96]

A8.71 For gross costs, we have flexed setup costs by +/- 20% to generate low and high scenarios. This is based on feedback from ICC (our peer reviewer) that the accuracy of our estimates is likely to be within a range of 10-20%.[97] For cost savings, as set out in Annex 10, we have flexed our assumption about the proportion of people who will no longer call their losing provider. The net cost is presented in NPC terms (over ten years).

Figure A8.6: Auto-Switch and GPL, net cost to industry (Residential and business)

£ (million) 10-year NPC	Scenario	Auto-Switch text-only		Auto-Switch text and online		GPL
		LP-based variant	CPS-based variant	LP-based variant	CPS-based variant	
Gross costs	Low	52.1	78.2	**72.3**	98.5	108.7
	Base	44.5	67.6	**61.7**	84.8	93.6
	High	36.9	57.0	**51.0**	71.1	78.6
Cost savings	Low	13.6	13.6	**14.9**	14.9	5.2
	Base	16.3	16.3	**17.8**	17.8	7.1
	High	19.0	19.0	**20.6**	20.6	9.0
Net cost	Low	38.5	64.6	**57.4**	83.6	103.5
	Base	28.2	51.3	**43.9**	67	86.6
	High	17.9	38	**30.4**	50.5	69.6

"LP-based variant" refers to the losing-provider based variant that we are proposing.

[96] We note that, under the proposed Losing Provider-based variant, the CPS would be required to generate N-PACs to send to losing providers, which may entail some cost. However, we consider that this cost would be minimal.
[97] ICC report, page 11

Figure A8.7: Auto-Switch and GPL, net cost to industry (Residential-only)

£ (million) 10-year NPC	Scenario	Auto-Switch text-only		Auto-Switch text and online		GPL
		LP-based variant	CPS-based variant	LP-based variant	CPS-based variant	
Gross costs	Low	44.7	71.1	63.0	89.3	N/A
	Base	38.4	61.7	53.9	77.2	N/A
	High	32.1	52.3	44.9	65.1	N/A
Cost savings	Low	11.9	11.9	13.0	13.0	N/A
	Base	14.2	14.2	15.5	15.5	N/A
	High	16.5	16.5	18.0	18.0	N/A
Net cost	Low	32.9	59.3	50	76.3	N/A
	Base	24.2	47.5	38.5	61.7	N/A
	High	15.6	35.8	26.9	47.1	N/A

"LP-based variant" refers to the losing-provider based variant that we are proposing.

Improving transparency about the switching process

A8.72 As set out in Section 4, we propose to impose on operators a requirement to provide transparency on the switching process to help ensure that consumers are better informed.

A8.73 In March 2016, we said that setup cost of producing and promoting this guidance (through marketing and point-of-sale material and other retail functions, such as websites) would be £20,000 for MNOs, £10,000 for large MVNOs, £5,000 for medium MVNOs and £2,000 for small MVNOs. We estimated that annual operating costs to maintain and update this material would be £30,000, £15,000, £5,000 and £2,000 respectively, though depending on the detail of this guidance there may well be scope for operators to fulfil this requirement at significantly lower ongoing cost.[98]

A8.74 We received no comments on these cost estimates. However, we have since reviewed these estimates. We now estimate that setup costs would be £30,000 for MNOs, £15,000 for large MVNOs, £5,000 for medium MVNOs and £2,000 for small

[98] March 2016 consultation, §8.40

MVNOs. Our estimates of the setup costs for MNOs and large MVNOs have increased because we assume that the changes necessary to improve transparency, as estimated above, would now also include new guidance on notice period charges.[99] We also now consider that there would be no additional ongoing costs associated with this requirement, as, once the new website pages and point of sale material have been developed, it is likely that ongoing costs to maintain this information would be negligible.

A8.75 Overall, the estimated total set-up cost across all operators is **£0.9 million** (in NPC terms over ten years).

ICC peer review

A8.76 As explained in paragraph A8.3, we commissioned an independent consulting company (InterConnect Communications, or ICC) to peer review the cost estimates that were published as part of our January 2017 cost update. ICC's review covered: the high-level approach / assumptions Ofcom had taken with regard to Auto PAC and GPL; the structural and functional integrity of the two workbooks containing the estimated costs; and a line by line analysis of the contents of the two workbooks to assess the reasonableness of the costs identified and the extent to which there might be any omissions on the costs.

A8.77 ICC's report is published alongside this consultation.[100] In summary, ICC's peer review found no errors with the workbook design, functions or formulae. ICC said that the approach taken (i.e. estimating costs based on a perception of an average service provider within certain defined size categories) was a reasonable approach. In terms of the actual costs for these representative service providers, ICC's overall conclusion is that "Ofcom's costings are basically sound" and "the worksheets provide a reasonable forecast of the various costs and resource timescales that could be expected were the reforms to be implemented".

A8.78 ICC made a few minor observations in relation to our cost estimates. Here, we briefly summarise how we have taken these observations into account:

- Absolute effort estimates: ICC said that the estimates are likely to be accurate to within +/-20%, and at best +/-10%.[101] Accordingly, in our high and low case scenarios we have increased gross setup costs by +/-20% (see Figures A8.6 and A8.7 above).

- Relative effort estimates: ICC noted that the proportion of effort assigned to different stages in the lifecycle of a project sometimes vary between the various proposed options. It also noted that the relative effort allocated for an MNO and a large MVNO varies across the different sub-activities. We do not consider that these ratios should necessarily be consistent across cost activities, as the development day assumptions depend on the number and specific nature of the sub-activities in the reform, so we have not adjusted individual development day

[99] We estimated the cost of these as a standalone change in our July 2016 consultation. Here we assume that a single change would be made to consumer guidance to cover all aspects of the switching reforms.
[100] The report is available here: https://www.ofcom.org.uk/__data/assets/pdf_file/0024/101994/ICC-report-on-cost-estimates.pdf
[101] ICC said this should not be interpreted as being 10% or 20% 'out' but rather should be seen as tolerance applied to the confidence of the estimate.

assumptions. Furthermore, ICC said that “it was not felt that the scale of variance arising would significantly distort the costings and the net effect would probably be neutral”.

- Training delivery estimates: ICC noted that training delivery is sometimes understated or overstated. As a result, we have estimated training costs in a more systematic way across the different reforms, and applied a constant ratio of training team resource to employee training time (12 FTEs per employee, as explained in paragraph A8.28). We explain our revised approach to training costs in this annex. This has not resulted in significant changes to the overall training cost.

- Acceptance testing resource: ICC said that the resource allocated to acceptance testing for repatriations activities (Middle manager) is inconsistent with the rest of the model. We have brought these activities into line with the rest of the model.

- Use of industry-standard systems: Where common vendors are used by more than one MNO or large / medium MVNO, due to common systems acquired, ICC said development work would be undertaken only once by these vendors rather than each provider carrying out bespoke development. We recognise that there is scope for cost savings where CRM systems are common across providers; however, we understand that there is a wide variety of CRM systems and architecture, and we do not have specific information on the number of larger providers who use a common system, rather than an in-house system. As a result, we have not attempted to reflect this in our cost estimates, but we note that this could provide scope for industry to implement the reforms more cheaply than we have estimated.

- Programme management: ICC said that programme management could substantially reduce costs. While we have not explicitly assumed a synergy factor in our estimates, we have assumed that stakeholders will operate a central programme management structure which will coordinate the different individual activities. The overall programme / project management is the sum of the individual project management resources. We do not therefore believe that our costs would be significantly altered by explicitly including programme management.

Annex 9

Calculation of reduction in double-paying

Introduction

A9.1 Double-paying occurs when a consumer continues to pay the losing provider for a period after switching provider, due to being required to pay charges for the duration of their notice period.

A9.2 In Section 5, we set out the impact that prohibiting charging for notice after the switching date would have on switchers. We said that one such impact would be a reduction in the double payments switchers incur. This annex sets out the methodology we have used to estimate the total reduction in double-paying that would occur, and in doing so we set out the changes that we have made since our July 2016 consultation.

A9.3 We have included the estimated reduction in double-paying for both PAC and C&R switchers in our impact assessment. However, we have presented the estimated reduction for each group of switchers separately. This is because the reduction in double-paying for PAC switchers is solely related to the introduction of a standalone prohibition on charging for notice after the switching date. In contrast, the reduction in double-paying for C&R switchers is in our view contingent upon introducing a prohibition on charging for notice, in combination with the introduction with either of the core process reforms (Auto-Switch or GPL). In this scenario, only C&R switchers who use the formal switching process to switch would avoid double-paying.

Reduction in double-paying for PAC switchers

A9.4 In our July 2016 consultation, we said that our proposal to prohibit charging for notice after the switching date would eliminate double-paying for all PAC switchers.[102] We estimated that this was equivalent to a reduction in double-paying of £13.3 million per year, or **£114.4 million** (10-year NPV) based on a discount rate of 3.50%.[103]

A9.5 We remain of the view that prohibiting charging for notice after the switching date would eliminate double-paying for PAC switchers, and stakeholders did not comment specifically on the methodology used to quantify this reduction in double-paying. As such, we have continued to quantify this impact in the same way as in our July 2016 consultation. However, we have revised our estimate to take account of new information and data obtained from providers since then.

Revised estimate of reduction in double-payments

A9.6 We have updated our estimate of the total reduction in double-paying for PAC switchers as follows:

[102] Double-paying incurred during the period after the new SIM is activated but before the number is ported out is not addressed, but this is to a large extent in the control of the customer and this element of double paying is not in any case captured in our estimates of the total amount of double-paying currently incurred under the status quo.
[103] July 2016 consultation, §A6.4 – §A6.8

- We have updated the number of PAC switches per year from 3.17 million to 3.23 million, based on data from a more recent time period.[104] We have also updated our assumption in respect of the percentage of PAC switchers on post-pay contracts from 87% to 85%, based on the BDRC 2016 omnibus (which contained a larger sample of mobile switchers than Ofcom's Switching Tracker). Our updated estimate of the total number of post-pay PAC switches per year is therefore 2.74 million.

- We have maintained our assumption that 66% of post-pay PAC switchers switch outside their minimum contract period (MCP) and can therefore be subject to notice period payments when they switch.[105] This implies there are around 1.82 million post-pay PAC switches outside of the MCP each year.

- As in July 2016, we understand that Vodafone and O2 currently do not charge notice beyond the port out date for PAC switchers. Since then we have also learned that [✂] follow the same policy. We estimate that the proportion of out-of-contract post-pay subscribers switching away from these mobile providers is 33%.[106] The total number of PAC switches that could involve double-paying after the port out date is therefore 1.22 million.

- We have maintained our assumption that the average number of days between the date of port-out and the date that their airtime contract was charged up to is 20 days. This is based on data from operators obtained in April 2016.[107]

- Finally, we have updated our assumption about average daily expenditure on mobile. In our July 2016 consultation, we assumed that this was 64p.[108] We have now obtained data on actual spend on in-bundle mobile services by post-pay customers who are outside of their MCP, which we consider to be the most relevant metric for the purposes of estimating double-paying. We have calculated a weighted average of the daily spend from the major providers which we understand currently impose notice period charges after the switching date ([✂ ✂]).[109] This led to a reduction in our estimate from 64p per day to 33p per day.

[104] This is based on the actual number of non-bulk PAC switches from November 2015 to October 2016. We discuss in more detail how we have updated the number of PAC and C&R switches in paragraphs A10.8 to A10.10 of Annex 10.
[105] This is based on data requested from operators on the proportion of PAC switchers giving notice between 11 and 17 April 2016 who were outside of their MCP when they gave notice. As noted in our July 2016 consultation, this excludes switchers giving notice within the final month of their MCP, which creates a risk of understating the total amount of double-paying experienced by PAC switchers.
[106] In July 2016, we estimated the proportion of all switches away from O2 and Vodafone (44%). We have since obtained actual data from mobile providers on their out-of-contract post-pay mobile customer bases for Q2 2016, which we consider to be the most relevant base.
[107] July 2016 consultation, §A6.6. We said the average number of days was 20.3. We have since corrected a slight error in this calculation. The corrected figure is 20.04 days.
[108] This was based on survey data on average stated expenditure on mobile services, but down-weighted by 20% in an effort to deduct spending on out-of-bundle charges, which are not relevant when calculating double paying.
[109] Data for Q2 2016. One of these providers [✂] was unable to split in-bundle spend for 'in-contract' and 'out of contract' customers. However, the average in-bundle spend for all customers was comparable to [✂], so we have used [✂] average daily spend as a proxy.

A9.7 Based on these adjustments, our revised estimate of the reduction in double-paying for PAC switchers is £8 million per year, or around £69 million over ten years (in NPV terms).

Existence of a 'waterbed' type effect

A9.8 In our July 2016 consultation, our quantitative assessment of double-paying did not reflect the possibility that prohibiting charges for notice after the switching date could lead to higher headline prices for mobile services. We questioned whether higher prices would arise as a result of our proposals, particularly given O2 and Vodafone already do not enforce notice period charges beyond the switching date. We also said that, to the extent that there was any revenue rebalancing towards headline prices, this would likely be outweighed by the consumer benefit arising from removing switching costs associated with notice periods.[110]

A9.9 In its response to the July 2016 consultation, Virgin said that this position was factually incorrect in light of the available evidence. Virgin made the following specific points:[111]

- It said that the existence of different notice period policies reflects choices made by consumers and providers, not a market failure.
- It said that our position is inconsistent with our very long-standing and well-documented position that the 'waterbed' effect in the UK mobile market is strong, albeit incomplete. It noted that we have proposed and defended this position in successive mobile call termination (MCT) reviews.
- [✂ ✂]
  [✂ ✂]
  [✂ ✂]
  [✂ ✂]
  [✂ ✂].
- It said we had put forward no evidence that there would not be a waterbed effect as a result of prohibiting charging for notice after the switching date.

A9.10 We have considered each of Virgin's points in turn below.

A9.11 We have explained the basis on which we consider notice periods to be harmful in Section 3. As summarised in paragraph 3.80, we consider that they result in consumers paying for a service they don't receive, or incurring difficulties (and sometimes delay) in managing their switch to avoid double-paying. Other consumers are deterred from switching because of their perception that there is a risk of double paying.

A9.12 We disagree with Virgin's assertion that our view is inconsistent with our long-standing position that there is a strong, albeit incomplete, 'waterbed' effect in the UK mobile market arising from changes in MCT charges. In MCT the theoretical mechanism for a waterbed effect is clear, plausible, well-established in the

[110] July 2016 consultation, §3.40
[111] Virgin response to July 2016 consultation, pages 25-26

economic literature, and has been supported by empirical evidence.[112] The mechanism is that a larger profit earned on termination from incoming calls to a subscriber makes it more profitable for each MNO to acquire new subscribers, since it will earn larger profits on incoming calls to those newly-acquired subscribers. Therefore, each MNO is willing to offer a lower price of subscription in order to attract new subscribers, and competition between MNOs forces each to do so. As such, a reduction in termination charges, e.g. imposed by regulation, reduces the termination profit per subscriber, which leads to an increase in the subscription price that the MNO finds it profitable to offer to acquire (or retain) subscribers.

A9.13 For a prohibition on notice periods to give rise to a waterbed effect, it is necessary, first, that a larger profit from notice period charges, which are earned only in circumstances in which a customer *switches away* from the provider, makes it more profitable for each provider to acquire new subscribers. Second, in recognition of this, the provider would need to offer a lower price today in order to attract new subscribers because of the possible prospect that in future that provider will lose the newly acquired customer to a competitor, so that at that future point in time it will earn profits from charging for notice beyond the switching date. In other words, the reduction in the provider's expected lifetime profit margin on the newly acquired customers today from charging lower prices would need to be more than offset by the expected future profits from charges for notice beyond the switching date if (a proportion of) those newly acquired customers switch away.

A9.14 In our view this mechanism, whilst not impossible in theory, lacks the same directness or plausibility of the mechanism for the waterbed in MCT:

- The profit that derives from the notice period charges is only earned in circumstances in which the consumer switches away. That is, the mechanism requires that providers would choose to set lower prices today only because they expect to *lose* those customers to competitors at some point in the future. In contrast, the mechanism in MCT for lower prices to acquire subscribers involves additional termination profits being earned on new subscribers from the start and when the provider retains the newly acquired subscribers.

- The future profit that the provider might obtain from the notice period is uncertain. At the time they acquire new customers a provider does not know whether and if so, when, these customers will switch away. Nor does the provider know how the consumers switching away will manage their notice period. While a provider may have knowledge of its average experience in the past of customer lifetime and duration of notice period after switching, future changes in these factors can have a material impact on the expected future profit they expect to receive from charging for notice periods. In our view, the nature and extent of the uncertainty is quite different from the expected termination profit on incoming calls in the context of MCT.

- We also consider that the implications of uncertainty are likely to be especially important here compared to MCT. As explained above, the mechanism for a waterbed-type effect in charging for notice periods requires that providers are willing to suffer an incremental loss of profit today (through lower prices to new subscribers), because of the uncertain prospect of a larger future profit gain in the

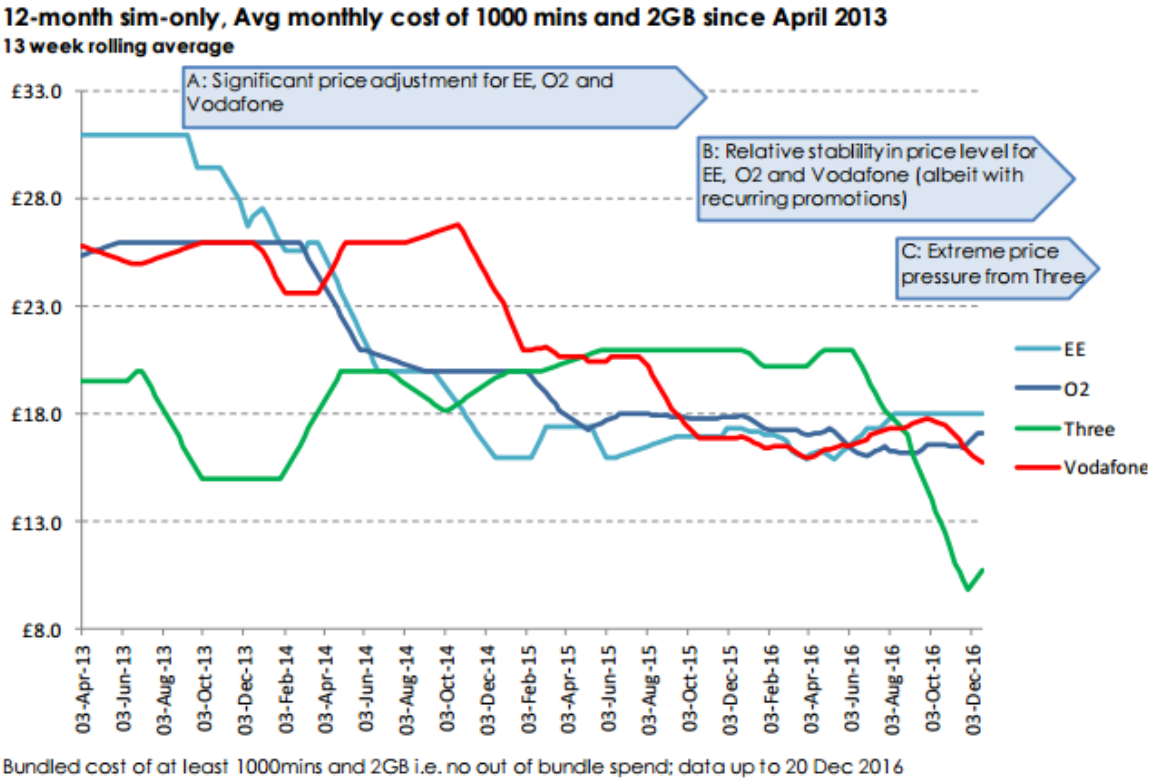
[112] For example, see Genakos, C. and T. Valletti, *Evaluating a decade of mobile termination rate regulation*, Economic Journal (2015). We note that this paper has suggested the waterbed effect in respect of MCT has reduced over time.

future (through charging for notice periods beyond the switching date when it loses those customers). The uncertainty about the timing and size of the future profit suggests that there would be significant commercial risk for a provider choosing to rely on an expected future profit gain by setting lower prices today.

- A further point of contrast is that we would expect the waterbed effect in MCT to apply similarly to providers that are in similar circumstances. However, while some providers charge for notice periods after the switching date, other providers do not impose such charges.

A9.15 We also do not find [✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]
[✂ ✂]. For example, a comparison of average prices for the four MNOs' 12-month SIMO 2GB packages over time (based on a chart provided by PurePricing in its UK Mobile pricing update for Q4 2016) shows that O2 and Vodafone have not consistently priced higher than all other providers.

Figure A9.1: Comparison of average prices for 2GB SIMO packages, 2013 to 2016



Source: PurePricing UK Mobile Update, Q4 2016

A9.16 We disagree with Virgin's suggestion that it is necessary for us to put forward evidence that there would not be a waterbed effect, especially given our view of the lack of directness or plausibility of the theoretical mechanism for such an effect.

A9.17 In summary, in the absence of either a clear and plausible theoretical mechanism or reliable empirical evidence, we do not consider we should adjust the scale of our benefits calculation to account for the theoretical possibility that mobile providers would recover this lost revenue through higher headline prices for mobile services.

Reduction in double-paying for C&R switchers

A9.18 In our July 2016 consultation, we estimated that the total double paying for C&R switchers would be between £9 million and £15 million per year.[113] In this section we firstly set out our updated estimate of the total amount of double-paying experienced by C&R switchers. We then set out the estimated reduction in double-paying that our reforms would deliver.

Revised estimate of double payments

A9.19 We have estimated the amount of double-paying for C&R switchers using broadly the same methodology as for PAC switchers (set out above):

- As set out in Figure A10.1, we have revised our estimate that the number of C&R switchers per year from 2.58 million to 1.90 million. Based on BDRC 2016 omnibus data, we have also updated our assumption in respect of the proportion of C&R switchers that are post-pay, from 73% to 71% (approximately 1.35 million). Of these, around 63% of C&R switchers switch outside their minimum MCP. Therefore, we estimate that the total number of C&R switches that could involve double paying is 0.85 million.[114]

- As set out in our July 2016 consultation, we cannot use operator data to estimate the average contract overlap duration specifically for C&R switchers because operators do not hold information on whether a consumer who cancels their service is switching to another provider, and, if so, when the new service begins. We therefore assume that C&R switchers incur the same contract overlap duration as PAC switchers who are subject to notice period payments beyond the port-out date, (i.e. an average of 20 days).

- As set out in paragraph A9.6 above, we assume that the average daily harm from double-paying is 33p.

A9.20 On this basis, we estimate that C&R switchers incur around £5.6 million in double paying per year, or £48 million over ten years (in NPV terms).

Reduction in double payments

A9.21 We have explained in paragraph A9.3 above that our reforms would not eliminate double-paying for all C&R switchers. This is because our proposal to prohibit charging for notice after the switching date only applies in the context of a formal switching process, so switchers who continue using a C&R arrangement may still incur double-payments.

[113] July 2016 consultation, §3.25

[114] We understand that all operators charge 30 days' notice when a consumer is simply terminating their service rather than porting their number, so all post-pay out-of-contract C&R switches could involve double-paying.

A9.22 The BDRC 2017 research provides direct evidence on the likely proportion of C&R switchers who would use our formal switching processes (Auto-Switch and GPL), and so avoid double-paying. We have set out our detailed assumptions in respect of take-up in Annex 10. Under our base case, we estimate that 38% of C&R switchers would use the full Auto-Switch process, while 24% would use a GPL process. This implies that around 0.32 million (out of 0.85 million) C&R switchers would avoid double-paying per year under our Auto-Switch process, and around 0.2 million C&R switchers per year would avoid it under GPL. This is equivalent to a total reduction in double-paying of around £2.1 million per year under Auto-Switch, and £1.3 million under GPL.

A9.23 Figure A9.2 sets out the total estimated reduction in double-paying for C&R switchers for Auto-Switch and GPL over ten years (in NPV terms), under each of our scenarios.

Figure A9.2: Reduction in double-paying for C&R switchers (£ million, 10 year NPV)

	Auto-Switch		GPL	
	Take-up	Reduction in double-paying	Take-up	Reduction in double-paying
Low	31%	15.0	17%	8.2
Base	38%	18.4	24%	11.6
High	45%	21.7	31%	15.0

A9.24 We note that our prohibition on charging for notice was not included in the process descriptions of Auto-Switch and GPL in our survey, so respondents would not have taken this into account when expressing their likelihood of taking up the options. As such, our estimates might understate the proportion of C&R switchers who would take up Auto-Switch or GPL if implemented in conjunction with our notice period reforms, and consequently they could understate the amount of double-paying that would be addressed.

A9.25 However, we also note it is also possible that this estimate might overstate the *incremental* reduction in double-paying delivered by our core process reforms, if some C&R switchers who said they would use Auto-Switch or GPL would actually become a PAC switcher (and thereby avoid double-paying) if we solely introduced a prohibition on charging for notice after the switching date.[115]

Reduction in double-paying for specific Auto-Switch elements

A9.26 As noted above, Figure A9.2 presents the estimated reduction in C&R double-paying for the full Auto-Switch process, for both residential and business consumers. We have also estimated the reduction in double-paying delivered by a text-based Auto-Switch process, as well as a text and online Auto-Switch process, for residential consumers only. We have done so by varying our assumptions about the number of switchers who would derive a benefit under these scenarios, in the same way that is set out (for time savings estimates) in paragraphs A10.72 to A10.73 below.

[115] In other words, the incremental reduction in double-paying for C&R switchers delivered by Auto-Switch or GPL is lower than the total reduction in double-paying delivered by the package of reforms.

A9.27 Under this approach, we estimate that a text-only Auto-Switch process would reduce double-paying for residential consumers by between £12 million and £17 million, with a base case of £15 million, while a text and online Auto-Switch process would reduce double-paying by between £13 million and £19 million (with a base case of £16 million).

Annex 10

Calculation of time savings

Introduction

A10.1 In Section 5, we set out the impact that our core process reforms (Auto-Switch and GPL) would have on switchers. We consider that one such impact would be a reduction in the unnecessary time and difficulties associated with progressing the switch, as Auto-Switch requires providers to offer faster routes (text or online) for consumers to obtain a PAC from the losing provider, while GPL eliminates the need for consumers to contact the losing provider at all. We have attempted to quantify this impact by estimating the value of the time savings that would be delivered under Auto-Switch and GPL.

A10.2 This annex sets out the methodology that we have used to derive our quantitative time savings estimates, focusing on the changes that we have made since the March 2016 consultation. We have followed broadly the same methodology that we used in March 2016, but we have updated several assumptions in light of stakeholder responses and new information received since then. In summary:

- We firstly calculate the time saving (in £ terms) per switcher, from using our core process reforms. We do this by multiplying the value of non-working time by the reduction in time taken to switch by switchers who use Auto-Switch and GPL, relative to the status quo.

- We then aggregate this potential time-saving across all those switchers that we anticipate will qualify for the time saving, by taking full advantage of the proposals. We do this by estimating the proportion of all switchers who currently speak to their losing provider when switching, who would avoid this interaction by using Auto-Switch or GPL and no longer speaking to their losing provider.

A10.3 Before setting out these revisions, we note that EE and Vodafone have questioned whether time savings constitute a reduction in harm:

- EE stated that the time saving averages out at 50p per switcher, and a switcher will gain once every two years if they are engaged. EE said these time savings are extremely small on an individual consumer level.[116]

- Vodafone said that the characterisation of time savings as a reduction in "harm" is extreme, as the time saved is of no benefit to the consumer if the switch or port is made impulsively and then regretted, or made without full understanding of the consequences (such as ETCs) or through slamming.[117]

A10.4 In our March 2016 consultation we recognised that time savings do not capture the full benefits our proposals would deliver in this respect, as this approach does not capture reduced hassle. We did not propose our intervention solely on the basis of time savings benefits. Rather, we used time savings as a lower bound for the quantifiable reduction in time and hassle that our reforms would likely deliver.[118] We

[116] EE response to March 2016 consultation, page 14
[117] Vodafone response to March 2016 consultation, page 40
[118] March 2016 consultation, §6.19

have used this time savings approach in previous impact assessments, such as our review of silent and abandoned calls,[119] and we remain of the view that this is a reasonable approach to estimating a lower bound.[120] We have also estimated the reduction in harm through an analysis of consumers' willingness to pay for our reforms, which we consider provides a more comprehensive quantification of the total reduction in consumer harm. We discuss this in Annex 11.

Number of switchers

Position in March 2016 consultation

A10.5 In the March 2016 consultation, we estimated that there are around 5.76 million mobile switches per year. To derive this estimate, we used:

- data obtained from Syniverse under formal information powers, which showed that there were 3.17 million PAC switches between August 2014 and July 2015;[121] and
- research (from the 2015 Switching Tracker) which indicated that 45% of consumers do not keep their number when switching mobile provider (i.e. switch via a C&R arrangement).[122] On this basis we estimated that there were 2.59 million C&R switches between August 2014 and July 2015.[123]

Responses to the March 2016 consultation

A10.6 Vodafone stated that the 3.17 million figure for the total number of PAC switchers implied that bulk switches have been included, which would overestimate the relevant volume.

A10.7 Vodafone also said that the sample size used to derive our assumption that 55% of switchers port their number is very small. It said it is not clear whether the proportion is statistically significant, particularly given our quantitative mobile research suggests (with a larger sample of switchers) that 67% switched via PAC.[124]

Revised assessment

A10.8 The data that we obtained from Syniverse on the number of PAC switchers did not include bulk ports.[125] We have since updated this data to reflect a more recent period. Our updated data shows that, between October 2015 and September 2016, there were 3.23 million non-bulk PAC switches.

[119] Ofcom, *Review of how we use our persistent misuse powers*, December 2015. See Annex 7, https://www.ofcom.org.uk/__data/assets/pdf_file/0015/80700/annexes_7-8.pdf
[120] In relation to Vodafone's points, we do not consider that our proposals will lead to a material increase in slamming or unwanted ETCs, for the reasons explained in Section 4 (§4.112 to §4.116) and Section 5 (§5.79 to §5.84).
[121] Syniverse currently manages the CPS that supports mobile number portability in the UK.
[122] Table 79, p. 212, Switching Tracker, data adjusted to exclude don't knows http://stakeholders.ofcom.org.uk/binaries/research/statistics/2015oct/Switching_Tracker_2015_data_tables_for_publication_20150925.pdf
[123] (3.17m / 0.55) * 0.45 = 2.59 million
[124] Vodafone response to March 2016 consultation, pages 41-43
[125] Bulk ports defined as 25 or more numbers being ported.

A10.9 We have also updated our assumption on the number of switchers who keep their number. We remain of the view that a nationally representative face to face survey provides the most reliable estimate of this proportion. We have updated our analysis on the basis of BDRC 2016 omnibus data, with a larger sample of mobile switchers than obtained via Ofcom's Switching Tracker. This survey reports 37% of consumers did not keep their number when switching mobile provider in the 12 months prior to interview (i.e. around 63% switched via PAC). We therefore estimate that there are around 1.90 million C&R switchers per year.

A10.10 Our updated view about the total number of relevant mobile switches per year is summarised in Figure A10.1 below.

Figure A10.1: Updated estimate of number of mobile switches per year

PAC	C&R	Total
3.23m	1.90m	5.12m

Value of time

A10.11 In our March 2016 consultation, we valued time spent by consumers going through the switching process using the value of non-working time as used by the Department for Transport (DfT) in its impact assessments. We have used this source in previous impact assessments, including in our 2013 assessment of changes to switching processes on the Openreach copper network.[126] Here, we used the value of £7.05 per hour.[127]

A10.12 We did not receive any comments relating to the value of time and we have maintained our approach. We have updated the value of non-working time to be consistent with the DfT's 2017 estimate of £5.51 per hour.

Length of time to switch

Position in March 2016 consultation

A10.13 In March 2016, we estimated that the average time taken to request PAC and/or terminate a service is 16.4 minutes, comprising 1 minute to find the losing provider's number (assumption) and 15.4 minutes on the call (based on s135 data from one operator).[128]

A10.14 We considered that, under Auto-PAC, a switcher requesting a PAC by text would spend approximately 3 minutes to progress a switch on average, relative to the status quo. This assumed: 1 minute to find the relevant short-code to request a PAC by text, 1 minute to send a request to the CPS by text and 1 minute to read

[126] See https://www.ofcom.org.uk/consultations-and-statements/category-2/consumer-switching-review.
[127] Value of non-working time, expressed in 2015 prices and values, see Table A1.3.1 of https://www.gov.uk/government/publications/webtag-tag-data-book-december-2015
[128] March 2016 consultation, §A7.13. Only [✂] could provide sufficiently granular data to give a complete view of average call duration from a consumer perspective. Based on this data we estimated that consumers currently spend an average of roughly 15.4 minutes on the phone to request a PAC and/or terminate their subscription (of which roughly 1.5 minutes is time spent navigating an IVR/on hold, and 13.9 minutes is time spent interacting with a customer services agent).

and understand the response text received from the CPS, which – in addition to containing the PAC – also includes information about the implications of switching.

A10.15 We considered that using GPL would also take switchers approximately 3 minutes to progress a switch on average, relative to the status quo. This assumed that the net effect on the interaction with the gaining provider would be an increase of roughly 1 minute and that it would take the switcher 2 minutes to both read and understand the text containing switching information received from the CPS, and to send a reply text confirming the intention to switch.

A10.16 Based on the assumptions outlined above, we estimated that the potential time-saving that a switcher could make, relative to the status quo, by using either of our proposed options to switch mobile provider was roughly 13.4 minutes.

Stakeholder comments

Status quo

A10.17 Several respondents said that we had overstated the duration of the calls between customers and mobile providers that would be saved by our process reforms.

A10.18 In relation to the calculation of our average call duration:

- Firstly, Vodafone and Virgin said that it is not clear how representative our average call duration is, as we did not make clear how many CPs provided call duration data that was used. Vodafone said that the actual task of requesting a PAC is a simple one that can be accomplished in a relatively short time.[129] Similarly, Virgin stated that our total average call length was more than [✂] longer than the average provided in their s135 response.[130]

- Vodafone also said the average call duration will vary according to whether the switcher is pre-pay or post-pay, and whether they are a PAC or C&R switcher, hence it is necessary to decompose switching volumes into post-pay and prepay for both PAC and C&R.[131]

A10.19 Furthermore, several respondents said that even if the average call duration used was representative, it would still overstate the time saving that our reforms could deliver. [✂] and Virgin said that the calls avoided by the new switching process (i.e. calls to request a PAC code by those who are put off switching by the need to contact their existing provider today) would be far shorter than the current average call duration, because this set of switchers would not initiate a discussion about their current services (or would not pursue it if the agent raises it).[132] Similarly, Vodafone said "a significant proportion of the call must be retention activity, which would not be eliminated, but merely deferred", and said that it should be discarded from consideration as a saving resulting from the reform.[133] Virgin said it is entirely possible that the time saving per switcher is overestimated by 50-80%.

[129] Vodafone response to March 2016 consultation, page 49.
[130] Virgin response to March 2016 consultation, page 18.
[131] Vodafone response to March 2016 consultation, page 45.
[132] Virgin response to March 2016 consultation, page 18. [✂] response to March 2016 consultation, page [✂].
[133] Vodafone response to March 2016 consultation, page 49.

A10.20 On the other hand, uSwitch presented the findings of its own research which shows that it takes an average of 25 minutes' worth of phone conversations to go through the mobile switching process, with the average customer having to contact their network twice (11% of people had to speak to their losing provider four or more times).[134]

Auto-PAC / GPL

A10.21 [✂] and Virgin submitted that, under the Auto-PAC and GPL processes, some customers will substitute the built-in opportunity for a competitive offer from the losing provider with an alternative discussion with an additional gaining provider. They said this could be reasonably proxied by assuming no net time saved for this set of customers. Virgin said that "we expect the proportion of customers that opt to use the new process but also incur additional search costs is likely to be moderate to low, but it is appropriate that such costs are included in the analysis".[135]

A10.22 O2 said that customers are likely to spend more than 1 minute assessing the switching implications they receive.[136]

A10.23 Furthermore, Virgin noted that some people will text to get their PAC and then also call the losing provider, which would increase their time spent switching.[137]

A10.24 Regarding the time taken to switch under GPL, [✂] said that:[138]

- The 3 minutes' worth of additional interaction time needed to progress the switch with the gaining provider should apply to all switchers, not just the 40% of switchers who we assume will no longer call the losing provider.

- Furthermore, we have failed to recognise the additional interaction and processing time that is necessary to ascertain that the current possessor of the device is the owner and account holder. [✂] said that the losing provider should have the right to reject any porting request where the information presented to the gaining provider by the consumer does not adequately identify the device holder as the owner and account holder. This will add to operator time at both the losing provider and gaining provider end.

- For the large proportion of new contracts which are currently made at a retail outlet, switchers may need to make two physical visits to a retail outlet, firstly to initiate the transfer request, and then, once they have decided to activate the transfer request, to sign the contract and pick up their handset. [✂] said that if a second visit to the gaining provider is required over and above the single visit needed under the existing process, then the extra cost of the second visit to the store must be factored in.

A10.25 Finally, Vodafone said that we have not modelled the incremental activity for both pre-pay and post-pay C&R switchers who become PAC switchers. It said that pre-pay C&R switchers would have to call or text their losing provider under Auto-PAC,

[134] uSwitch response to March 2016 consultation, page 3
[135] Virgin response to March 2016 consultation, page 20. [✂] response to March 2016 consultation, page [✂]
[136] O2 response to March 2016 consultation, page 13
[137] Virgin response to March 2016 consultation, page 19
[138] [✂] response to March 2016 consultation, page [✂]

or have an extended conversation with the gaining provider under GPL, while post-pay switchers would have to extend their current conversation with extra time spent to request a PAC.[139]

Our revised view

Status quo

A10.26 To estimate the time saved per switcher, we are interested in the current length of calls to request a PAC and / or cancel a service, that would be avoided if we introduced Auto-Switch (which we previously called Auto-PAC) or GPL.

A10.27 To obtain a better understanding of these call lengths, in November 2016 we issued a formal information request to six mobile providers [✂ ✂]. We asked them to provide, for pre-pay and post-pay calls (separately):

- Question 1 (Q1): Average monthly call times for calls which resulted in a successful PAC request and, separately, calls which resulted in a successful termination, between November 2015 and October 2016; and

- Question 2 (Q2): Individual call times for all calls which resulted in a successful PAC request and, separately, calls which resulted in a successful termination, for a shorter period between November 2015 and October 2016.

A10.28 We considered that this would provide us with data for the most relevant sample of calls, for a more recent time period, and across more providers.

A10.29 Mobile providers provided data at varying levels of granularity:

- [✂] provided the requested data in full. Separately, in response to a previous formal information request, [✂] also provided average call times from September 2015 for a wider sample of calls that also included "retention" calls.

- [✂] provided the requested data for Q2, but their average call times in Q1 were based on a wider sample of calls than was requested. Specifically, in the case of [✂], the data included calls in which the customer ultimately decided not to cancel their contract (i.e. a retention call), as well as customers who had no intention of cancelling but use it as a negotiation tactic when discussing renewing their contract (e.g. an "upgrade" call). In the case of [✂], the data included calls which resulted in a PAC being issued; a disconnection requested; a customer being upgraded; or a customer choosing to do nothing. [✂] data also excluded IVR times.

- [✂ both provided data for Q1 that included upgrades calls. [✂] also provided data for Q2 on the same basis. [✂] could not provide data for Q2, and could not split out pre-pay from post-pay calls.

- [✂] could only provide data in relation to Q1. These average call times were based on a wide sample of calls, including customers calling to enquire about, or request to, port their number in.

[139] Vodafone response to March 2016 consultation, page 51

A10.30 On this basis, for the purposes of estimating time savings, we have used:

- Call times from [✂] across the whole period November 2015 to October 2016.
- Call times from [✂] across the shorter period for which they could provide individual call times (i.e. data from Q2), on the basis that this is the more relevant sample of calls. We have also added an IVR time for [✂], based on the average IVR time across the other CPs.
- Call times from [✂] across the whole period (i.e. data from Q1), adjusted by the ratios of the length of successful PAC requests / terminations to the length of all calls that we observed in other providers' data.[140] We consider that this provides a way of estimating, for these providers, the length of calls that relate solely to successful PAC requests and terminations. We have specifically adjusted [✂

✂]

A10.31 We have excluded [✂] data as we consider that the sample of calls included is too wide to provide meaningful evidence on the time taken to request a PAC / terminate a service under the status quo.

A10.32 Figure A10.2 summarises the data provided by each provider, including any adjustments where relevant (as described above).

[✂] Figure A10.2: Data on call lengths

[✂]

[140] For example, if we observed that a provider's calls which resulted in a successful PAC request / termination lasted *X* minutes on average, while calls which resulted in a successful PAC request / termination / retention / upgrade lasted *2X* minutes on average, this implies a downward adjustment to [✂] average call times of 50%.

A10.33 Based on the data set out in Figure A10.2, we have estimated that the weighted average call duration to successfully request a PAC is 8.9 minutes, while the weighted average call duration to terminate a service is 8.8 minutes.[141] The range of average successful PAC request call lengths, across providers, is smaller than 2 minutes, while the range of average successful termination call lengths is smaller than 3 minutes.

A10.34 We recognise stakeholders' views that the average time taken to successfully request a PAC / termination could overstate the length of calls that would specifically be avoided under Auto-Switch or GPL. This would be the case if the group of switchers who would use our process reforms are people who currently have no interest in discussing a better deal with their losing provider. On the other hand, it is possible that the group of switchers who encounter most difficulties with the current process – and so would be most likely to use our process reforms – are those who spend a long time being subject to a significant amount of unwanted save activity, which would mitigate this overstatement. On balance, though, there is a risk that switchers who experienced difficulties with the process had shorter calls than those who actively engage in save activity. Consequently, and recognising this is a simplification, we consider that it is reasonable to take a more conservative approach to our time savings estimate by using median call lengths.[142]

A10.35 We note that average call times are shorter than the time taken to switch implied by uSwitch's data, but, in respect of specific call durations, we consider that actual data from providers is likely to be more reliable than average times based on survey respondents' recall.[143]

A10.36 On the basis of median call times, we estimate that the time taken to successfully request a PAC under the status quo, that would be saved by a switcher who used our process reforms instead of calling their losing provider, is 7.7 minutes. The

[141] We have weighted each providers' average call time using actual data from mobile providers on their total mobile customer bases as at June 2016.
[142] We also performed a different adjustment to take account of this risk, in which we calculated average call times having removing the longest 10% of calls. Call times under this adjustment were within 2% of median call times.
[143] We also consider that one reason why uSwitch's data shows a longer average call time is because, for switchers who make more than one call, it aggregates total time across multiple calls. We consider the issue of multiple calls in the next section.

equivalent time for successful terminations is 7.4 minutes.[144] In addition, we continue to assume that it takes a consumer roughly 1 minute to find the losing provider's customer services telephone number. Overall, therefore, we assume that it currently takes a switcher around 8.7 minutes to progress a switch when requesting a PAC and 8.4 minutes when terminating a service.

Auto-Switch

A10.37 We have maintained our assumption about the length of time required to progress a switch under Auto-Switch (3 minutes). We recognise that consumers might spend longer than 1 minute to understand the switching information. However, we are only seeking to estimate the component of the switchers' current interaction with their losing provider that would persist under Auto-Switch. We consider that switchers are likely to spend around a minute of their call with the losing provider understanding the switching implications. Any additional time spent doing this, outside of their call with the losing provider, will be equivalent under the status quo and Auto-Switch.

A10.38 We also recognise that some switchers may use the Auto-Switch process as well as calling the losing provider. However, we do not award a negative time saving to this group for two reasons:

- Firstly, it is likely that the nature of their call with the losing provider will be different, and so the overall time taken to progress the switch may still be shorter.
- Secondly, to the extent that the interaction does take the same time (or longer), these switchers have chosen to request their PAC in this way, and so we consider it would not be appropriate to assign them a dis-benefit.[145]

A10.39 We have not adjusted our assumption about the length of time required to progress a switch under Auto-Switch, to account for a longer discussion with an additional gaining provider. We do not see why switchers' incentives to explore different offers with their gaining provider would be affected by the method through which they request their PAC.

GPL

A10.40 We recognise that the gaining provider conversation will be longer under GPL for all switchers, not just those who no longer call the losing provider. However, we have not awarded a negative time saving to the group of switchers who still call their losing provider, for two reasons:

- Firstly, we consider that there is greater uncertainty about whether these switchers will actually continue calling their losing provider under GPL. As explained in the next section, we estimate the size of this group of switchers based on the number of respondents to our BDRC 2017 research who said they would not want to switch via GPL. However, in a GPL-based world, this would be the only formal switching process available. It is possible that some of these switchers, when confronted with an exclusively GPL switching process, might decide to use it (and not call their losing provider).

[144] Of which 6.2 and 5.9 minutes respectively relate to the time spent speaking to the losing provider.
[145] We note that a time saving is intended to proxy for the reduction in harm that switchers experience.

- Secondly, even for switchers who will still call their losing provider under GPL, we expect their losing provider call will be shorter than under the status quo. Under GPL, switchers are not obliged to stay on the call to obtain a PAC, or successfully terminate their service, if they know that they can hang up and call their gaining provider at any time. Furthermore, the time spent giving the PAC code will be saved.

A10.41 On balance, we assume that the net time saving for this group of switchers is zero compared to the status quo.

A10.42 We do not agree with [✂] point that we should factor in additional authentication time, and factor in two physical visits to the gaining provider's retail outlet. As set out in Section 4, we have specified a GPL process, which relies on CLI verification, and whereby the confirmation text can be sent in real time while the consumer is in-store. We have factored in time for the consumer to read and understand the text containing switching information, and send a reply text confirming both that they are the device holder, and their intention to switch.

A10.43 Overall, therefore, we maintain our assumption that it would take switchers approximately 3 minutes to progress a switch on average under GPL, relative to their interaction with the gaining provider under the status quo.

A10.44 Finally, under both processes:

- We recognise that some C&R switchers may choose to port their number and incur incremental activity, particularly redeeming their PAC with the gaining provider. However, these switchers cannot be worse off than under the status quo because they have chosen to incur this additional activity, presumably because it is outweighed by the benefits of being able to keep their number (which, under our time savings approach, we have not sought to quantify). As a result, we do not consider it would be appropriate to assign these switchers a time-dissaving.

- When signing up with the gaining provider, switchers can request for the port / cancellation to be initiated at the point that their new SIM is activated. This saves a further interaction with the gaining provider, relative to the status quo (where switchers signing up online or over the phone need to contact their gaining provider again to redeem their PAC). We do not have information on how long the PAC redeem process generally takes switchers, so we have not factored this into our quantitative time savings estimate. However, we note that this is a source of understatement within our estimates.

Overall position on time saved under Auto-Switch and GPL

A10.45 We estimate that the time-saving that a switcher would make, relative to the status quo, by using Auto-Switch or GPL to switch is roughly 5.7 minutes for existing PAC switchers and 5.4 minutes for existing C&R switchers. This is equivalent to a time saving for PAC switchers of 52p per switch, and 49p for C&R switchers.

Number of switchers that derive a time saving

Position in March 2016 consultation

A10.46 In our March 2016 consultation, we recognised there was uncertainty surrounding the actual proportion of switchers that would use the Auto-PAC / GPL process and

no longer call their losing provider, thereby deriving a time saving. We assumed that:

- Between 20% and 60% of PAC switchers would derive a time saving, with a central case of 40%. Our central case was based on the proportion of people who used the Openreach GPL process for fixed line and broadband, and did not contact their losing provider at any point during the switch;[146] and

- 32% of C&R switchers would begin using the PAC process to port their number. Of these switchers, we again assumed that between 20% and 60% would derive a time saving, with a central case of 40%.

A10.47 On this basis, we estimated that the aggregate time saving for both options was between £10.9m and £32.6m, with a base case of £21.7m based on a time-saving accruing to around 1.6 million switchers.

A10.48 This estimate assumed that switchers who currently request a PAC and/or cancel their service by channels other than phone (25% of switchers) were eligible for a time saving. We recognised that other channels may be faster than requesting a PAC and/or cancelling a service by phone. We said that, in the limit, if these switchers do not derive any time saving under our proposals, the total estimated time saving benefit under each option decreases by around 25% to between £8 million and £24 million, with a central case of £16 million.[147]

Stakeholder responses to the March 2016 consultation

A10.49 Virgin recognised that it is difficult to estimate the proportion of switchers that would derive a time saving, but said that it would be significantly lower than the proportion who no longer called their losing provider under the Openreach GPL process, due to the need for switching information in mobile, and the unsuitability and confusion arising to customers if all implications of switching information is sent to a customer by way of text message. [✂ ✂].[148]

A10.50 [✂] said that it cannot judge whether 40% is the correct one, but that it is one of the major areas in which we have conducted a sensitivity analysis, considering either higher or lower proportions, so it has to conclude it is a proportion with which Ofcom is content.[149]

A10.51 [✂], Virgin and [✂] questioned the basis for our assumption that 32% of C&R switchers would begin porting their number. Virgin submitted that only 14% of C&R switchers in our 2015 survey stated a genuine desire to keep their number (whereas we included a further 32% who said they would like to have kept their number "but were not that bothered" in our estimate). It also said that only 31%, rather than 70%, cited genuine issues that our process reforms would resolve as reason why they did not keep their number. On this basis, Virgin said that as few as 4% of C&R switchers would begin porting their number.[150]

[146] March 2016 consultation, §A7.23
[147] March 2016 consultation, §A7.30
[148] Page 19, Virgin response to March 2016 consultation
[149] [✂] response to March 2016 consultation, page [✂]
[150] Page 7, Virgin response to March 2016 consultation

A10.52 Vodafone said that our estimate may be overstated as we cannot be sure that the time saving would accrue to the 25% of switchers who do not switch by phone.[151]

Our revised view

A10.53 The number of switchers who will derive a time saving under our process reforms depends on:

- the proportion of switchers who are eligible for a time saving (because of the time it takes to request PAC and / or cancel, under the status quo); and
- the proportion of this group that will use Auto-Switch or GPL, and no longer call their losing provider.

Proportion of switchers eligible for a time saving

A10.54 In March 2016, under our base case, we assumed that all switchers were potentially eligible for a time saving, regardless of the channel they used to request PAC and/or cancel. However, as set out in paragraph A10.48 above, we recognised that some channels may be faster than requesting a PAC and/or cancelling a service by phone, and therefore there was greater uncertainty over the time saving for this group of people. We now consider it is appropriate to exclude switchers who currently request a PAC and/or cancel via email, webform or post, from our time saving calculation, as we do not have information about how long it currently takes to do this.

A10.55 We continue to include people requesting PAC and / or cancelling in-store, as we understand that this channel still requires switchers to have a conversation with their losing provider (usually on the phone). We also continue to include people using a webchat route. Although we do not have direct information on the time taken to use webchat, we consider that this route provides an opportunity for unwanted save activity by a customer service agent, and so we assume it takes switchers a similar time as the phone route.[152]

A10.56 In our BDRC 2017 research, 81% of PAC switchers requested their PAC by phone, in-store or webchat, while 51% of C&R switchers cancelled their service by phone, in-store or webchat.[153] Based on these proportions, Figure A10.3 below summarises our revised number of switches that could potentially derive a time saving.

[151] Vodafone response to March 2016 consultation, page 51
[152] Furthermore, in our consultation on reforming the Triple-play switching process, we obtained data showing that the average time taken to cancel by webchat was longer than by phone (though we noted that it is not clear that consumers spend all this time engaging with a customer service agent as webchat can be undertaken in bursts while undertaking other activities). See §A8.42 of our Consultation on Triple-play switching, https://www.ofcom.org.uk/__data/assets/pdf_file/0016/54106/annex.pdf
[153] BDRC 2017 slides 25 and 26

Figure A10.3: Estimated number of mobile switches per year by phone/in-store/webchat

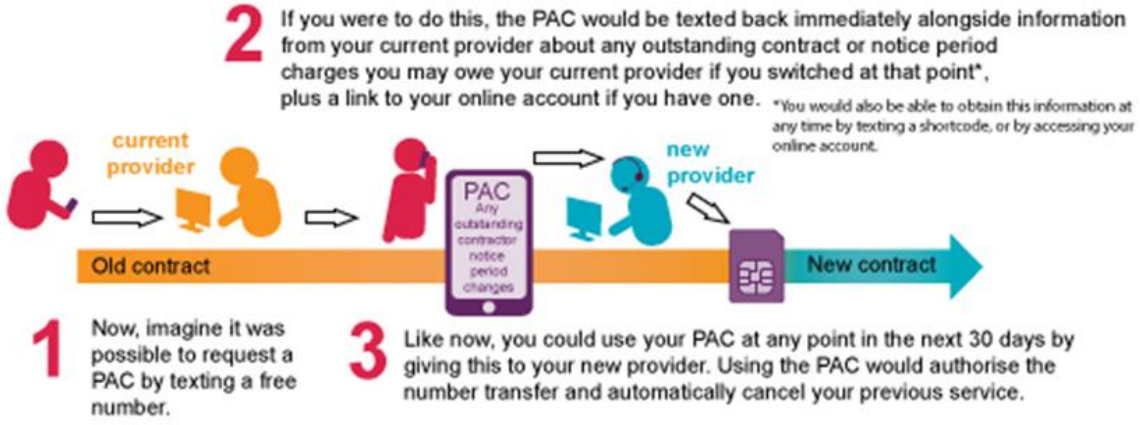
PAC	C&R	Total
2.61m	0.97m	3.58m

Proportion of switchers that use Auto-Switch / GPL

A10.57 The BDRC 2017 research also provides more direct evidence about the proportion of these switchers who are likely to use Auto-Switch or GPL.

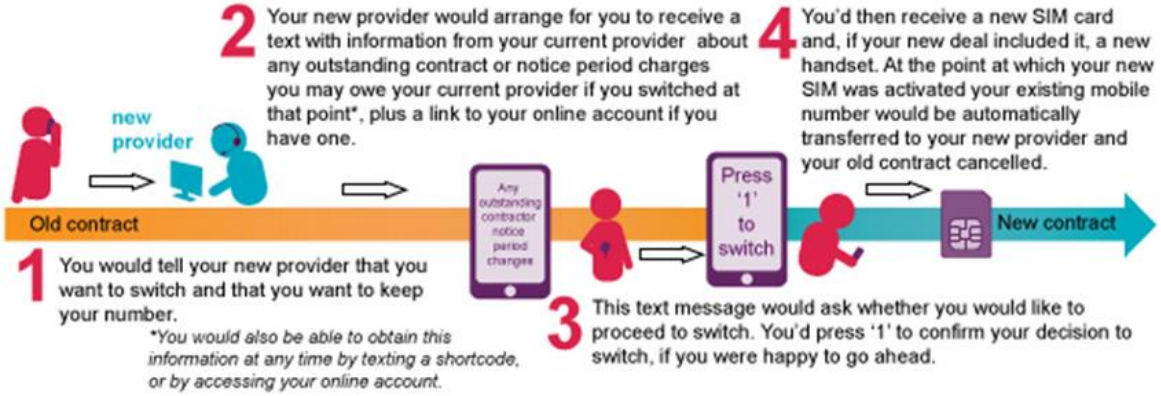
A10.58 As part of this research, we presented respondents with a series of diagrams which set out the steps that would be necessary to switch via our Auto-Switch and GPL process. We have represented these diagrams below. Our descriptions did not mention any changes to notice period policies, because we are seeking to estimate the incremental reduction in harm delivered by our core process reforms, over and above our proposal to prohibit charging for notice after the switching date.[154]

Figure A10.4: Description of Auto-Switch text route in online survey



[154] The diagrams presented below were shown to PAC switchers. We showed slightly different diagrams to C&R switchers which explained how they could switch without transferring their number, as facilitated by both process reforms. BDRC 2017 slides 71 and 72.

Figure A10.5: Description of GPL process in online survey



A10.59 We asked respondents whether they would use each of the process reforms to switch their mobile service, if they were available for free, rather than the way that they switched last time.[155] Respondents could answer as follows:

- definitely would;
- probably would;
- possibly would / wouldn't;
- probably wouldn't; and
- definitely wouldn't.

A10.60 Figure A10.6 presents respondents' answers.

[155] For Auto-PAC, we asked PAC switchers whether they would switch using the text route and the online route separately. For C&R switchers, we asked whether they would switch via either of these routes, if they were available.

Figure A10.6: Summary of stated responses to likely take up of core process reforms, among those who used phone, in-store or web-chat routes[156]

	Auto-Switch SMS	Auto-Switch SMS/online		GPL	
	n=1019	n=1019	n=385	n=1019	n=385
	PAC switchers	PAC switchers	C&R switchers	PAC switchers	C&R switchers
Definitely would	45%	46%	45%	29%	23%
Probably would	36%	37%	32%	39%	39%
Possibly/Possibly not	12%	14%	15%	20%	26%
Probably wouldn't	5%	2%	6%	7%	9%
Definitely wouldn't	2%	2%	2%	4%	2%
Net: 'would'	81%	82%	77%	68%	63%

A10.61 The stated take-up rate for the full Auto-Switch process (i.e. text and online routes), based on those who would definitely / probably would use it, is 82% for PAC switchers and 77% for C&R switchers. The equivalent figures for GPL are 68% and 63%. We assume for the purposes of calculating take-up rates that respondents who gave the mid-point answer (possible would / wouldn't) would not use them.

A10.62 However, we recognise that some respondents who said they would use Auto-Switch or GPL under a hypothetical scenario may not actually do so, and would instead continue to progress their switch as they had done previously. For the purposes of our impact assessment, we have therefore down-weighted the stated take-up rates presented in Figure A10.6 above to take account of this behaviour. We use adjusted data as an estimate of the actual proportion of switchers that would derive a time saving. Recognising that there is uncertainty over this proportion, we have assumed a range based on different down-weighting approaches:

- Under our low case, we assume that 80% of switchers who said they would *definitely* use our processes when free, will actually do so. This implies that 37% of PAC switchers and 36% of C&R switchers would actually derive a time saving under full Auto-Switch (23% and 18% for GPL).
- Under our base case, we assume that 80% of switchers who said they would definitely use our processes when free will actually do so, and 20% of switchers who said they would *probably* use our process will actually do so. This implies that 44% of PAC switchers and 43% of C&R switchers would actually derive a time saving under full Auto-Switch (31% and 26% for GPL).
- Under our high case, we assume that 51% of PAC switchers and 50% of C&R switchers would actually derive a time saving under Auto-Switch (39% and 34% for GPL). This is because (as discussed below) there are reasons to believe that actual take-up could be higher than our base case estimates, and so we consider

[156] These are the take-up rates for the specific sub-group of respondents who currently request PAC and/or cancel their service by phone, in-store or webchat. i.e. the population who are eligible for a time saving by using our process reforms. See BDRC 2017 slide 93.

it is appropriate to present a symmetric range around the base case. This is equivalent to assuming that 80% of switchers who said they would definitely use our processes when free will actually do so, and 40% of switchers who said they would probably use our process will actually do so. We note that our high case take-up rates are still substantially lower than stated take-up as presented in Figure A10.6.

A10.63 We believe these weights reflect a reasonable view of likely take-up of our core process reforms. We have taken similar approaches in previous projects which have required us to assess hypothetical take-up.[157] We have also considered alternative down-weights such as 70/30, 70/30/10 (taking 10% of the responses to the mid-point i.e. 'possibly would/possibly wouldn't) and 60/40 and concluded that an 80/20 adjustment was reasonable as the error margins of the adjusted data broadly encompass the results produced by applying alternative weights.

A10.64 Finally, we note that take-up of the core process reforms is not necessarily equivalent to the number of calls / webchats saved. There are reasons why take-up rates could understate or overstate this number:

- Our survey indicates that 32% of PAC switchers and 28% C&R switchers had to call their losing provider more than once under the status quo.[158] Switchers who are currently calling multiple times could save multiple calls. This means our take-up rates could significantly underestimate the avoided number of losing provider interactions, and thus the aggregate time saving.

- On the other hand, we recognise that some switchers who take up the core process reforms might also still contact their losing provider, rather than directly substituting this contact with an Auto-Switch request or a conversation with their gaining provider. It is less clear that the down-weighting adjustments set out above take account of these switchers, because they constitute a group of people who would partially (though not fully) alter their behaviour following the introduction of our reforms, as distinct from switchers who would simply not use the process despite having said so. As these switchers would not necessarily derive a time saving by using the processes, this creates a risk that our aggregate time saving is overstated.[159] While it is difficult to determine the potential scale of this risk of overstatement from our survey evidence, we note the following:

    - Our survey directly asked respondents whether they would still contact their losing provider, if they used Auto-Switch or GPL to switch. We do not consider this data robust enough to predict future behaviour because of its double-hypothetical nature i.e. asking people to predict a subsequent reaction to a hypothetical scenario. Nevertheless, it provides an understanding of why respondents perceived they would still need to contact their losing provider

[157] Ofcom, Provision of Quality of Service information, January 2009. We assessed the likelihood of using information to compare mobile provider performance. In a conservative scenario, we assumed that 70% of those saying they were "very likely" to use the information and 20% of those saying "fairly likely" would actually do so in reality. See: https://www.ofcom.org.uk/__data/assets/pdf_file/0024/91725/Provision-of-quality-of-service-information.pdf, page 32.
[158] BDRC 2017 slide 23. We also note uSwitch's research which suggests the average customer had to contact their network twice, and 11% had to speak to their losing provider four or more times.
[159] Though they would still derive some value from using the process i.e. this does not affect willingness to pay responses (which are discussed in the next annex).

under the new core process reforms. Around 11% of PAC switchers who said they would use Auto-Switch said they would still contact their losing provider, would do so exclusively for reasons related to managing their notice period (7% for GPL),[160] which would not be necessary if the proposal to prohibit charging for notice was in effect. These switchers would still likely derive a time saving under the core process reforms.

- Among PAC switchers who would use the processes, the majority (61% for Auto-Switch and 59% for GPL) said that they anticipated spending less time speaking to their losing provider (10% / 15% said they would spend more time speaking to their losing provider).[161]

A10.65 More generally, we continue to believe that over time the proportion of consumers contacting their losing provider for reasons that are not necessary under Auto-Switch or GPL would fall, as awareness of (and trust in) the switching process increases. In this regard, we consider that assuming a static take-up rate over a ten-year period is a conservative approach to take.

A10.66 On this basis, and recognising the degree of uncertainty inherent in this exercise, we consider that our adjusted take-up rates (as set out in paragraph A10.62 above) are a reasonable reflection of the proportion of switchers who would derive a time saving under Auto-Switch and GPL. Figure A10.7 summarises our revised estimate of the number of switchers who will obtain a time saving under Auto-Switch and GPL, based on these various take-up rates.

Figure A10.7: Updated estimate of number of calls / webchats saved per year (million)

	Take-up rate	PAC	C&R	Total
Auto-Switch	Low (37% / 36%)	0.97	0.35	1.32
	Base (44% / 43%)	1.15	0.42	1.57
	High (51% / 50%)	1.33	0.48	1.82
GPL	Low (23% / 18%)	0.60	0.17	0.78
	Base (31% / 26%)	0.81	0.25	1.06
	High (39% / 34%)	1.02	0.33	1.35

[160] "To give notice"; "To find out if I needed to give them a notice period to leave". BDRC 2017 slides 57 and 63, adjusted for don't knows.
[161] BDRC 2017 slides 58 and 64. The equivalent proportions for C&R switchers is 62% spending less time / 6% spending more time under Auto-Switch, and 61% spending less time / 11% spending more time under GPL (Slides 81 and 88).

A10.67 Finally, in relation to stakeholder comments on the proportion of C&R switchers porting their number, we note that in March 2016 we assumed under our base case that around 13% (i.e. 40% of the 32% who were prevented from porting their number due to process related reasons) obtained a time saving, rather than 32%. Notwithstanding this, we now have consumer research estimates of the proportion of C&R switchers likely to use our Auto-Switch and GPL proposals (either to port their number, or to switch without porting their number). We consider that this is the best way of estimating the number of C&R switchers who will derive a time saving.

Summary of time savings estimates

A10.68 Figure A10.8 below summarises the changes that we have made to our time savings assumptions since our March 2016 consultation.

Figure A10.8: Summary of changes to time savings assumptions since March 2016

<table>
<tr><th>Assumption</th><th>March 2016 consultation</th><th>Revised (low case)</th><th>Revised (base case)</th><th>Revised (high case)</th></tr>
<tr><td>Number of switchers</td><td>PAC: 3.17 million
C&R: 2.59 million</td><td colspan="3">PAC: 3.23 million
C&R: 1.90 million</td></tr>
<tr><td>Proportion of switchers currently eligible for time saving</td><td>PAC: 100%
C&R: 100%

(Those who use all routes to request PAC / cancel)</td><td colspan="3">PAC: 81%
C&R: 51%

(Those who use phone / in-store / webchat routes to request PAC / cancel)</td></tr>
<tr><td>Proportion of switchers deriving a time saving under full Auto-Switch</td><td rowspan="2">PAC: 40%
C&R: 13%[162]</td><td>PAC: 37%

C&R: 36%</td><td>PAC: 44%

C&R: 43%</td><td>PAC: 51%

C&R: 50%</td></tr>
<tr><td>Proportion of switchers deriving a time saving under GPL</td><td>PAC: 23%

C&R: 18%</td><td>PAC: 31%

C&R: 26%</td><td>PAC: 39%

C&R: 34%</td></tr>
<tr><td>Current PAC request / termination call lengths</td><td>1 minute to find number

15.4 minutes on phone (PAC and C&R combined)</td><td colspan="3">1 minute to find number

7.7 minutes on phone (PAC)
7.4 minutes on phone (C&R)

(Based on the median call length)</td></tr>
<tr><td>Length of time to use new process</td><td>3 minutes</td><td colspan="3">3 minutes</td></tr>
<tr><td>Value of time
(DfT non-working time)</td><td>£7.05</td><td colspan="3">£5.51</td></tr>
</table>

A10.69 Based on these changes, we estimate that:

[162] This is derived from the 32% of C&R switchers substituting to new process multiplied by the assumption that 40% of switchers would derive a time saving.

- The aggregate time saving delivered by Auto-Switch (over 10 years in NPV terms) is **between £5.8 million and £8.0 million, with a base case of £6.9 million**. This reflects a time saving of 52p per switcher for between 0.97 million and 1.33 million PAC switchers (with a base case of 1.15 million switchers) and a time saving of 49p per switcher for between 0.35 million to 0.48 million C&R switchers (with a base case of 0.42 million switchers).

- The equivalent time saving delivered by GPL is **between £3.4 million and £5.9 million, with a base case of £4.7 million**. This reflects a time saving of 52p per switcher for between 0.6 million to 1.02 million PAC switchers (with a base case of 0.81 million switchers) and a time saving of 49p per switcher for between 0.17 million and 0.33 million C&R switchers (with a base case of 0.25 million switchers).

Aggregate time saving for specific Auto-Switch elements

A10.70 Paragraph A10.69 above presents the estimated time savings for the full Auto-Switch process, for both residential and business consumers. We have also estimated the time savings delivered by a text-based Auto-Switch process, as well as a text and online Auto-Switch process, for residential consumers only.

A10.71 The time saving per switcher under these scenarios is equivalent to the time saving per switcher under full Auto-Switch. However, the number of switchers who derive a time saving is lower.

A10.72 Firstly, data from the 2016 Ofcom Communications Market Report suggests that residential tariffs account for around 87% of all mobile connections.[163] This implies that, all other things equal, the aggregate time saving for residential consumers will be around 13% lower than the time saving for residential and business customers.

A10.73 Secondly, in respect of the text-only Auto-Switch route:

- Switchers who want to port multiple numbers can only use the online route. Data from Syniverse shows that around 6% of non-bulk PAC switches involve multiple numbers. This implies that the Auto-Switch text-only route is applicable to around 0.3 million fewer switches per year.[164] In making this adjustment, we assume that survey respondents believed they could switch multiple numbers using the Auto-Switch text-only process. If this was not the case, then our take-up rates and incremental WTP estimates would already reflect this advantage of the online route and we would not need to make an adjustment to the total number of switches per year.

- Secondly, even focusing on single number ports, take-up of the text-only route will be lower:

    - PAC switchers: Some PAC switchers in our survey said they would only use the online route. Under our base case, we estimate that 43% of PAC

[163] Ofcom Communications Market Report, August 2016, page 159. https://www.ofcom.org.uk/research-and-data/cmr/cmr16/the-communications-market-report-uk
[164] We assume a similar proportion of C&R switches relate to multiple numbers.

switchers would derive a time saving from the Auto-Switch text-only route (with a low case of 36% and a high case of 50%).[165]

- C&R switchers: Our survey only asked C&R switchers whether they would switch via either the text or online routes, if they were available. This means that we cannot directly estimate take-up of the text-only route. We have therefore derived an implied take-up rate using the ratio of our take-up rates for the text-only route and the full Auto-Switch process from PAC switchers. Under this approach, the equivalent C&R take-up rates are 42% (with a low case of 35% and high case 49%). We note that, because this ratio is an understatement of the true ratio (for the reasons discussed in footnote 180 below), applying this value to C&R switchers will produce an *overestimate* of the value of the text-only route.

A10.74 Taking these adjustments into account, we estimate that the aggregate time saving for residential consumers, delivered by the Auto-Switch text route, would be between £4.6 million and £6.4 million (with a base case of £5.5 million). The aggregate time saving delivered by the text and online process would be between £5.0 million and £6.0 million, with a base case of £7.0 million.

[165] BDRC 2017 slide 94. These take-up rates are very similar to the text and online process because most respondents who said they would use the online route also said they would use the text route.

Annex 11

Estimating the benefits of introducing Auto-Switch and GPL using a WTP approach

A11.1 In Section 5, we explained that we have commissioned consumer research (the "BDRC 2017 research") to better understand the benefits that implementing either Auto-Switch or GPL could deliver. This research explored how much switchers who had recently switched via PAC or C&R would be willing to pay to use Auto-Switch and GPL to switch, rather than the way they switched last time. We consider that this evidence is capable of providing a better estimate of the total reduction in harm to switchers that our options could deliver, because it relates specifically to the options we have proposed, and (in principle at least) captures the full value of the difficulties that switchers would avoid when using a new process.[166]

A11.2 In what follows we summarise the survey methodology that was used to estimate consumers' willingness to pay (WTP) for each process reform. We then explain how we have used these outputs to quantify the aggregate benefits (reduction in harm) that our reforms would likely deliver. Based on this approach, we estimate that Auto-Switch would deliver between £16 million and £43 million respectively by way of benefits to switchers (NPV over ten years), while GPL would deliver between £17 million and £41 million. However, there are several reasons why these ranges might understate the benefits switchers would derive from their implementation, and we discuss these below.

Survey methodology

A11.3 We commissioned BDRC to undertake consumer research into switchers' experiences and attitudes towards alternative switching processes.[167] BDRC conducted an online survey of 1,251 PAC switchers and 758 C&R switchers during January and February 2017.

A11.4 As explained in Annex 10, this survey presented respondents with a series of diagrams which set out the steps that would be necessary to switch via Auto-Switch and GPL. We asked respondents whether they would use each of the process reforms, if they were available for free (i.e. whether they would request a PAC via a free text message / online rather than the way they requested this last time, or whether they would switch via GPL rather than the way they switched last time).[168] Respondents could answer as follows: i) Definitely would; ii) Probably would; iii) Possibly would / possibly wouldn't; iv) Probably wouldn't; and v) Definitely wouldn't.

[166] For this reason, we consider that estimating reduction in harm via consumer WTP is an alternative to a time savings approach. However, due to the way in which the survey was designed, we do not consider that it will capture the potential benefits to C&R switchers from reduced double-payments or loss of service. Therefore, these benefits are separate to any WTP-based estimate.
[167] We defined a switcher as someone who had changed their mobile provider in the last 18 months.
[168] For Auto-Switch, we asked PAC switchers whether they would obtain their PAC using the text route and a separate question as to whether they would obtain their PAC via the online route instead of text. For C&R switchers, we asked whether they would switch via either of these routes.

A11.5 We then asked any respondent who answered i) to iii) whether they would pay a given price to use the relevant process.[169] We presented respondents with the following price points, randomly: 50p; £1; £2; £5; and £10. Respondents were asked whether they would pay a price, in turn, until they said they would probably or definitely not pay that price (or until they reached the maximum price of £10). Based on these responses, we determined the price that each respondent was at least definitely willing to pay, and the price that they were at least probably willing to pay, and then used these figures to calculate averages.[170]

A11.6 Figure A11.1 below presents the average stated WTPs for Auto-Switch and GPL, split by PAC switchers and C&R switchers. We have presented averages across two different samples:

- The first two rows present averages calculated across switchers who said they would definitely or probably use the process if it was free. In all cases, switchers were willing to pay more for GPL than Auto-Switch.
- The last two rows present averages calculated across all switchers. As such they reflect the fact that some switchers would not be prepared to pay anything for these processes because they would not take it up if free. Because more people said they would use Auto-Switch than GPL (as set out in Figure A10.6 above), the differences between WTPs for GPL and Auto-Switch are narrower when based on all switchers. Indeed, in the case of all C&R switchers, average WTPs for Auto-Switch are higher than for GPL.

Figure A11.1: Average stated WTP for process reforms (all switchers)[171]

		Auto-Switch (text and online)		GPL	
		Definitely pay	Probably pay	Definitely pay	Probably pay
Switchers who said they would use processes	PAC switchers	**77p**	**£1.98**	**£1.04**	**£2.53**
	C&R switchers	**73p**	**£1.98**	**90p**	**£2.26**
All switchers	PAC switchers	**62p**	**£1.59**	**67p**	**£1.63**
	C&R switchers	**52p**	**£1.41**	**51p**	**£1.28**

[169] We assumed that any respondent who answered iv) to v) did not have a positive valuation for the process, because they were unlikely to use it when it was free. As a result, we did not ask these respondents about their WTP for the process and we instead applied a £0 value to these respondents in our calculations. Respondents who answered iii) were asked the WTP question, but we have also assigned a value of £0 to them.
[170] Where a respondent only indicated a price they would definitely pay, we use this for the price they would probably pay too.
[171] BDRC 2017 slide 15.

A11.7 Figures A11.2 and A11.3 present the distribution of average stated WTPs among PAC switchers who said they would definitely or probably use the processes.[172] They show that while the most common price among these respondents was 50p, a significant minority of switchers who said they would use the processes were prepared to pay a lot more to do so. For instance, around 17% of PAC switchers who said they would use Auto-Switch said they would definitely or probably pay at least £5 to use it (6% when restricted to definitely), while 12% (4%) would pay at least £10. Around 24% of PAC switchers who said they would use GPL said they would definitely or probably pay at least £5.

Figure A11.2: Distribution of average stated WTP for Auto-Switch (text and online) among PAC switchers who said they would use Auto-Switch

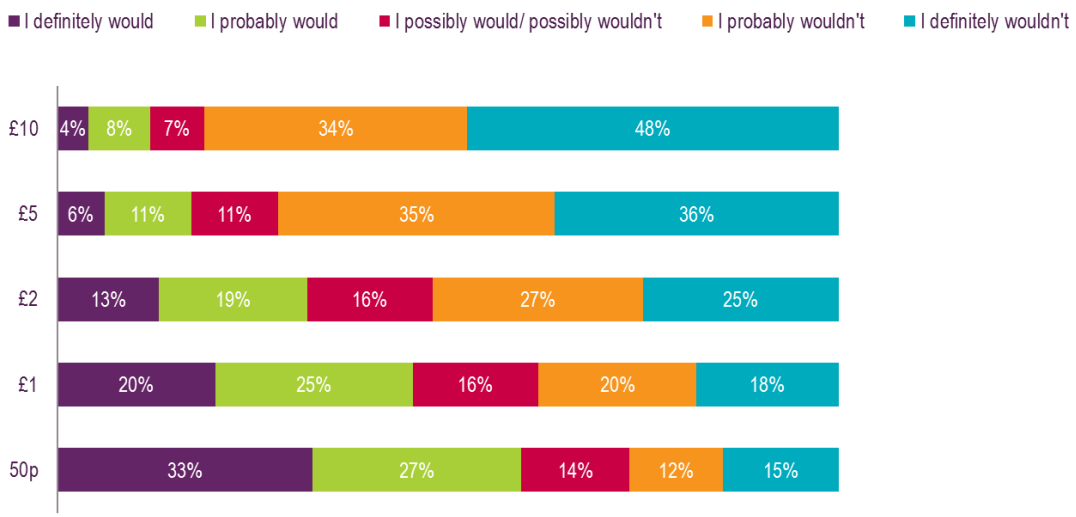
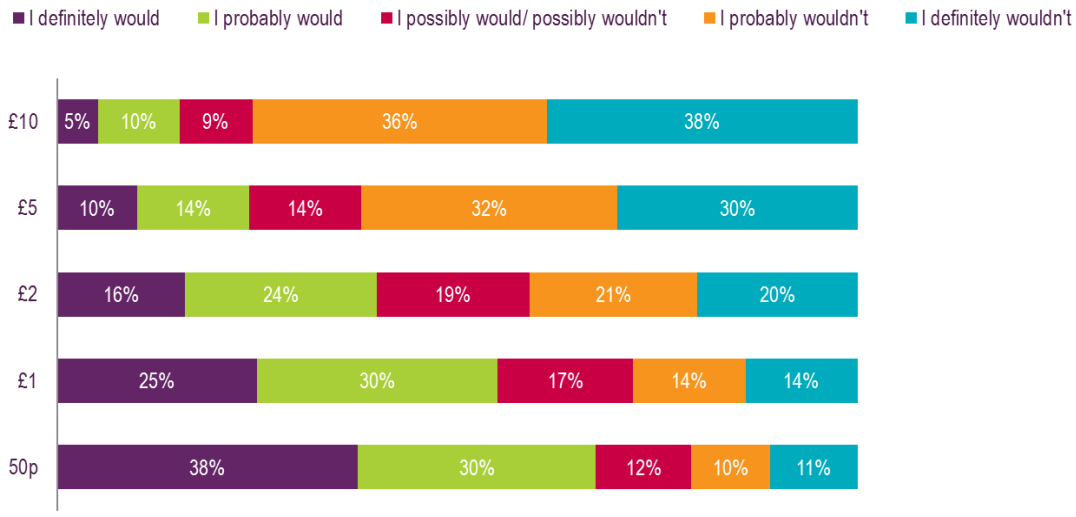


Figure A11.3: Distribution of average stated WTP for GPL among PAC switchers who said they would use GPL



[172] BDRC 2017 slides 59 and 65. We have presented the distribution for PAC switchers. The distribution for C&R switchers shows broadly the same pattern.

A11.8 There are several reasons why these figures are likely to understate the maximum amount that each respondent would be willing to pay:

- Respondents may have been willing to pay more than the price allocated to them but were unable to express this because they could only react to a given set of price points, up to a maximum of £10. For example, someone who said they would definitely pay £2 and probably pay £5 would be willing to definitely pay somewhere between £2 and £5, but our methodology allocates them a "definitely pay" value of £2. Respondents who said that they would definitely or probably pay £10 to use Auto-Switch or GPL could in theory be prepared to pay significantly more than £10, but this is not captured in our results.

- Respondents' answers could have been influenced by what they consider reasonable to pay in a market context in which switching is generally free. The survey focused on a WTP approach to estimating consumers' values for processes. However, around two-thirds of the 27% (21%) of PAC switchers who said they would use Auto-Switch (GPL), but not be prepared to pay anything for it, said this was because they should not (as a point of principle) have to pay for a switching process.[173] These respondents were asked how much they would be *willing to accept* (WTA) to switch the same way they did last time, rather than through Auto-Switch or GPL. Analysis of verbatim responses suggests respondents may not have sufficiently understood this question, and so we have not adjusted our quantitative estimates to take account of the WTA responses. However, we consider it is likely that at least some of these respondents these place some positive value on our reforms, which our WTP estimates are not capturing. We also note that a number of empirical studies have found that consumers generally express a higher WTA for a good or service than their WTP.[174]

- Respondents, as noted in paragraph 5.43, are unlikely to have fully accounted for the indirect benefits of a new switching process, namely those benefits flowing from gaining providers having better incentives to help consumers understand and navigate the switching process.[175] We have considered two areas for which gaining providers may have improved incentives to offer better provision of information to consumers:

    - **Number portability:** The current processes could perform better in terms of enabling those that wish to port their number to do so: 7% of switchers that got a new number reported their original preference had been to keep their number.[176] This outcome could be partially due to gaining providers having limited incentives to inform prospective customers who have not yet requested their PAC about number portability. This is because there would be a risk that

[173] BDRC 2017 slides 59 and 65.
[174] A summary of the evidence of the WTP-WTA ratio was carried out by Horowitz and McConnell (Journal of Environmental Economics and Management, 2002).
[175] A distinction can be made between direct benefits (the perceived saving in time and difficulties progressing switching attributed to a new process) and indirect benefits (flowing from gaining providers having better incentives to help consumers understand and navigate the switching process. We consider that while respondents are likely to fully account for direct benefits, this may not be the case for indirect benefits.
[176] Based on the responses to QA11 of Ofcom's 2017 Mobile Switching survey, slide 20. Responses to QA12 provide further insights as why those with an original preference to keep their number ended up getting a new number. Reasons given include the difficulties of the process of keeping a number, including the role of the losing provider, as shown in slide 21.

such customers would be exposed to and accept a reactive save offer from the losing provider instead of proceeding with the switch.[177] This risk stems from such customers having to contact the losing provider to request their PAC in order to port their number, thus providing the losing provider with an opportunity to make a reactive save offer. We consider it likely that both process reforms would provide gaining providers with better incentives to inform prospective customers about number portability as the porting customer would no longer need to speak with the losing provider.

- **Avoiding double-paying:** Similarly, gaining providers may currently have limited incentives to inform prospective customers about double-paying and ways to manage this. Under the current process, prospective customers need to contact the losing provider to understand the extent of, and options in managing, double-paying. This could lead to prospective customers deciding not to progress the switch. In contrast, our process reforms would make it more attractive for gaining providers to give such information to prospective customers. Gaining providers can explain that no charges are incurred beyond the switching date and that double-paying would not arise if the switch is undertaken through the formal switching process.

- Respondents may have discounted their valuations if they were uncertain about how the process would operate in practice. We consider this is a more significant issue for GPL than for Auto-Switch. Responses to Question D2B ("*Why do you say you wouldn't use this method?"*) of the BDRC 2017 research indicate that some respondents did not fully grasp the GPL process description, as they mentioned that the process was confusing, or mentioned things that do not necessarily form part of the GPL process (e.g. having to go in store).

A11.9 Finally, as explained in paragraph 5.42, there is an additional reason why the average stated WTPs for Auto-Switch are likely to understate the benefits to switchers. This is because the survey did not allow PAC switchers who preferred the online route to request a PAC to express their additional value for this route, over and above their WTP for the text route. For the category of PAC switchers who would use the text route to request a PAC but would prefer the online route, our survey was not able to obtain their additional value for the online route, over and above their WTP for the text route.[178] This affected around 55% of PAC switchers who said they would use the text route (equivalent to around 42% of all PAC switchers).[179] It means that the incremental value of the online route (over and above the text route) is based solely on the sub-group of PAC switchers who said

[177] By the term reactive save offers, we mean circumstances where the losing provider is able to accurately identify customers intending to switch, as a result of information they receive as part of the formal switching process, and to make them a counteroffer not to switch. The term does not refer to counteroffers requested by a consumer who explicitly contacts the losing provider with the purpose of obtaining a better offer.

[178] The survey was designed with reliability and robustness of data front of mind. We were concerned that asking a respondent for their WTP for three separate options (Auto-Switch text route, Auto-Switch online route, and GPL route) would increase the complexity and length of the survey, which could create a risk of fatigue and lead to dropouts. As such, for a given respondent, the survey only explored their willingness to pay for up to two routes, prioritising Auto-Switch SMS and GPL.

[179] BDRC 2017 slide 53.

they wouldn't use the text route, but would use the online route (equivalent to around 2% of all PAC switchers). [180]

Methodology used to aggregate WTP data

Adjusting for take-up

A11.10 In principle, we can aggregate the average WTP per switcher across the total number of consumers we estimate would switch per year to derive an estimate of the total WTP for our Auto-Switch and GPL processes. The simplest way to derive this estimate is to multiply the average stated WTPs in Figure A11.1 above, by the total number of PAC switchers (3.23 million per year) and C&R switchers (1.90 million per year).[181]

A11.11 However, as discussed in Annex 10, we recognise that some respondents who said they would use Auto-Switch or GPL may not actually do so, even when the options are free to use. These respondents would derive no value from the availability of Auto-Switch or GPL, even if they have stated a positive willingness to pay for it in our survey. Consistent with our approach to estimating time savings, therefore, we have adjusted the average stated WTPs in Figure A11.1 to reflect this. This means that under our base case we have taken:

- 80% of the aggregate WTP values from respondents who said they would definitely use each process (if free), on the basis that 20% of these respondents will not actually go on to use the process reform and realise their stated WTP value; and
- 20% of the aggregate WTP values from respondents who said they would probably use each process (if free), on the basis that 80% of these respondents will not actually go on to use the process reform and realise their stated WTP value.[182]

A11.12 Figure A11.4 summarises the adjusted average WTPs for Auto-Switch and GPL. Our low case and high case take-up assumptions are also consistent with those assumed for our time savings estimates, as set out in paragraph A10.62:

- for the low case, we have taken 80% of the aggregate WTP values from respondents who said they would definitely use each process (if free) and 0% (zero) of the aggregate values from respondents who said they would probably use the process; and
- for the high case, we have taken 80% of the aggregate WTP values from respondents who said they would definitely use each process (if free) and 40% of

[180] A further implication of this is that we overestimate C&R switchers' WTP for the text-only route. This is because our survey did not directly ask C&R switchers their WTP values for a text-only process, so we cannot directly disaggregate the value that respondents derive from the text-only route, relative to the online route. Instead, we have derived an implied value using the ratio of our WTP estimates for the text-only route and the full Auto-Switch process from PAC switchers. Because this ratio is an understatement of the true ratio, applying this value to C&R switchers will produce an *overestimate* of the value of the text-only route.
[181] Our estimate of the total number of switchers per year is set out in Figure A10.1.
[182] All other respondents are effectively assigned a value of £0, except (for Auto-Switch) those who said they might take up the text option and would definitely / probably take up the online option. These respondents are excluded from the sample. BDRC 2017 slide 6.

the aggregate values from respondents who said they would probably use the process.

Figure A11.4: Average adjusted WTP for process reforms (all switchers)[183]

Scenario		Auto-Switch (text and online)		GPL	
		Definitely pay	Probably pay	Definitely pay	Probably pay
Low case (80:0 weight)	PAC switchers	39p	70p	44p	72p
	C&R switchers	34p	71p	27p	54p
Base case (80:20 weight)	PAC switchers	42p	85p	47p	87p
	C&R switchers	36p	82p	31p	66p
High case (80:40 weight)	PAC switchers	44p	99p	49p	£1.01
	C&R switchers	38p	92p	34p	78p

Treatment of "definitely" and "probably" WTPs

A11.13 As explained above, our survey allowed respondents to state whether they would *definitely pay or probably pay* a given price to use our process reforms. This means that some respondents stated both a "definitely" WTP and a "probably" WTP (e.g. if they said they would definitely pay £2, but would only probably pay £5, and would definitely not pay £10, they would have a definitely WTP of at least £2 and a probably WTP of at least £5). In general, respondents were probably willing to pay significantly more for both reforms than they were definitely willing to pay. This is reflected in the difference between the average WTP figures in Figure A11.4.

A11.14 We recognise that there is more uncertainty about whether respondents would in reality be willing to pay the price they said they probably would. This uncertainty reflects the notion of "hypothetical bias", which refers to the tendency for survey respondents to overstate their actual WTP for a good or service when questioned about a hypothetical scenario. Several academic studies have recommended addressing this bias by restricting the analysis of WTP to respondents who said they were definitely sure that they would pay their stated value,[184] on the basis that

[183] BDRC 2017 slide 16. High case values are based on bespoke analysis.

[184] A number of studies, such as Blumenschein et al. (2008, 2001, 1998) and Champ, Moore, and Bishop (2009), have found that actual WTP is closely approximated by focusing only on individuals who are "definitely sure" that they would be willing to pay for the good or service. These studies used a wide range of candidate public and private goods, such as: sunglasses; health programmes for diabetes and asthma; and donating to save an endangered bird. See:

this provides a much closer approximation to consumers' true WTPs. Taken at face value, this could imply that we should derive our estimates of the aggregate reduction in harm using average WTP values that respondents would definitely be prepared to pay.

A11.15 However, we consider that our methodology already goes some way to addressing the risk of hypothetical bias, because we are adjusting stated WTP figures to reflect the likelihood of actual take-up when the processes are available for free. The academic literature focuses on survey designs in which respondents state whether or not they would pay for a good or service at a particular price point, before being asked how certain they are of their answer. In contrast, we have first asked respondents whether or not they would use our processes if they were free, and then adjusted the WTP values to reflect the fact that not everyone will go on to use them (as set out in paragraphs A11.11 – A11.12).[185] As such, the average adjusted WTP values are already significantly lower than stated WTPs.[186]

A11.16 Moreover, we also note that other academic studies, such as an experiment into peoples' valuation of a box of chocolates (Johannesson, Liljas and Johansson, 1998) have found that restricting the analysis to "definitely WTPs" can overcorrect for hypothetical bias, leading to an underestimate of respondents' actual WTPs.[187]

A11.17 As a result, we do not believe that we should restrict our analysis solely to values that respondents said they would definitely pay. Instead, recognising the degree of uncertainty around switchers' actual values for our process reforms, we have varied our approach to taking account of adjusted "probably WTP" values across our range of scenarios, as follows:

- In our **low case**, we place no weight on values that respondents would probably pay. This is the most conservative approach because it places zero weight on i) any values expressed by respondents who said they would probably use the reforms if free and ii) "probably WTP" values expressed by respondents who would definitely use the reforms. In other words, it only includes "definitely" WTP values among those who would definitely use the process.

Blumenschein, Karen, Glenn C. Blomquist, Magnus Johannesson, Nancy Horn, and Patricia Freeman. (2008). "Eliciting Willingness to Pay without Bias: Evidence from a Field Experiment," *The Economic Journal* 118, 525 (January), 114-137. Blumenschein, Johannesson, Krista K. Yokoyama, and Patricia R. Freeman. (2001). "Hypothetical versus Real Willingness to Pay in the Health Care Sector: Results from a Field Experiment," *Journal of Health Economics* 20,3 (May), 441-457. Blumenschein, Karen, Johannesson, Blomquist, Bengt Liljas, and Richard M. O'Conor. (1998). "Experimental Results on Expressed Certainty and Hypothetical Bias in Contingent Valuation," *Southern Economic Journal* 65,1 (July), 169-177. Champ, P. A., R. Moore, and R. C. Bishop. "A Comparison of Approaches to Mitigate Hypothetical Bias." *Agricultural and Resource Economics Review* 38(2009):166–180.

[185] Conceptually the adjustment is to our estimate of take-up, but for practical reasons it is simpler to implement it through an adjustment to the average stated WTP figure, rather than simply aggregating average stated WTPs across a smaller population of switchers. This is because average stated WTPs are reported across all respondents whereas the adjustment to reflect likelihood of take-up depends on whether respondents said they would definitely or probably use the process.

[186] To illustrate this using our base case: the adjusted "definitely" WTP for Auto-Switch among PAC switchers (42p) is 20p or 32% lower than the equivalent stated figure (62p).

[187] Johannesson, M., Liljas, B. and Johansson, P-O. (1998). An experimental comparison of dichotomous choice contingent valuation questions and real purchase decisions, *Applied Economics*, vol. 30(5) (May), pp. 643–7.

- In our **base case**, we have presented a range which is determined by the values that respondents told us they would *definitely* pay (at the lower end), and the values that respondents told us they would *definitely or probably* pay (at the upper end). This is because we do not consider for our base case that we have an adequate basis to pick any specific figure (either the lower or higher end, or any value in between).

- In our **high case**, we take the average WTP that respondents would probably or definitely pay (whichever is highest). This is equivalent to assuming that, after down-weighting for take-up (i.e. having already accounted for the likelihood that some switchers will not actually use the process and derive a positive valuation), switchers who use the process will realise the value they said they would probably pay. We consider that this constitutes a credible upper bound for the quantified benefit to switchers, recognising that a quantified benefit based purely on average stated probably WTPs (i.e. without making any adjustments for take-up) would be significantly larger.

A11.18 On this basis, we have used the following average WTP values to derive our estimates of aggregate reduction in harm:

Figure A11.5: Average adjusted WTPs for NPV calculations (all switchers)

Scenario		Auto-Switch	GPL
Low case (80:0 weight)	PAC switchers	39p	44p
	C&R switchers	34p	27p
	PAC / C&R	37p	38p
Base case (80:20 weight)	PAC switchers	42p – 85p	47p – 87p
	C&R switchers	36p – 82p	31p – 66p
	PAC / C&R	40p – 84p	41p – 79p
High case (80:40 weight)	PAC switchers	99p	£1.01
	C&R switchers	92p	78p
	PAC / C&R	96p	92p

A11.19 Applying these average values across all switchers gives the following range for our aggregate WTP values:

- Under our low case, the total aggregate WTP for all existing switchers is £1.9 million per year for Auto-Switch and £1.9 million per year for GPL. The 10-year NPVs are **£16.4 million and £16.6 million** respectively.

- Under our base case, the total aggregate WTP for all existing switchers is between £2.0 million and £4.3 million per year for Auto-Switch, and between £2.1 million and £4.1 million per year for GPL. The 10-year NPV ranges are **£17.5 million to £37.0 million, and £18.1 million to £34.9 million** respectively.

- Under our high case, the total aggregate WTP for all existing switchers is £4.9 million per year for Auto-Switch and £4.7 million per year for GPL. The 10-year NPVs are **£42.5 million and £40.8 million** respectively.

Aggregate willingness to pay for specific Auto-Switch elements

A11.20 Figure A11.5 presents aggregate WTP estimates for the full Auto-Switch process, for both residential and business consumers. We have also estimated the WTP benefits delivered by a text-based Auto-Switch process, as well as a text and online Auto-Switch process, for residential consumers only, as follows:

Average WTP per switch values for text-based route

A11.21 Our survey directly asked PAC switchers whether they would request their PAC using the text route (and how much they would be willing to pay for this option) separately from the online route. We have therefore been able to directly estimate average WTP values for PAC switchers. These values, which are slightly lower than the values for the full Auto-Switch process, are set out in slide 16 of the BDRC 2017 research. As explained in paragraph 5.42 of the main consultation document and A11.12 above, we consider that the difference between respondents' WTP for the text-only route and the full Auto-Switch process will be understated, because it does not reflect many respondents' preference for the online route.[188]

A11.22 Our survey only asked C&R switchers whether they would request their PAC via either text or online routes, if these routes were available. This means that we cannot directly disaggregate the value that respondents derive from the text-only route, relative to the online route. Instead, we have derived an implied value using the ratio of our WTP estimates for the text-only route and the full Auto-Switch process from PAC switchers. These are set out in Figure A11.6 below. We note that, because this ratio is an understatement of the true ratio, applying this value to C&R switchers will produce an *overestimate* of the value of the text-only route.

Figure A11.6: Average adjusted WTPs for text-only Auto-Switch

Scenario	Average WTP for PAC switchers	Ratio of text-only to text and online WTP implied by PAC switchers	Implied average WTP per for C&R switchers
Low	37p	95%	32p
Base	39p – 80p	93% - 94%	33p - 77p
High	93p	94%	86p

[188] This means that the WTPs we have calculated for the full Auto-Switch process are understated – but the WTPs for the text-only route will be accurate.

Number of switchers for text-based route

A11.23 We aggregate average WTP values across a smaller pool of switchers than for the full Auto-Switch / GPL processes, for the reasons explained in paragraphs A10.72 to A10.73. This is a further reason why the aggregate reduction in harm delivered by the text-only process is lower than full Auto-Switch.

Aggregate WTP estimates for residential consumers

A11.24 Taking these adjustments into account, we estimate that the aggregate WTP for residential consumers, delivered by the Auto-Switch text route, would be £12.7 million under our low case, £32.6 million under our high case, and between £13.3 million to £28.4 million under our base case.

A11.25 The aggregate time saving delivered by the text and online process would be £14.3 million under our low case, £37.0 million under our high case, and between £15.3 million to £32.2 million under our base case.

Annex 12

Benefits for would-be switchers

A12.1 In Section 5 (paragraphs 5.53 to 5.62), we summarised the benefits for would-be switchers as part of our presentation of our impact assessment of the reforms.

A12.2 This annex explains why our reforms are likely to deliver material benefits to would-be switchers, i.e. the group of mobile users who might *contemplate* switching after the introduction of the reforms (some but not all of whom might go on to switch), and presents indicative estimates of the number of consumers that could benefit based on the evidence available to us. However, given the inherent difficulties, this annex does not attempt to estimate the monetary size of this benefit.

A12.3 We have conducted the analysis for the packages of reforms rather than conducting it on an incremental basis, but where possible we give some indication of how the different reforms might contribute to the overall impact.

A12.4 In order to understand the benefits to would-be switchers we have analysed data from the BDRC 2015 Quantitative Study about the behaviour of **active considerers**, i.e. mobile users who considered changing provider and actively started looking for one but decided not to change provider in the last 12 months; and **inactive consumers,** i.e. mobile users who did not consider changing provider or who considered changing provider but did not start looking for one in the last 12 months.[189] While we have not quantified the impact we expect the reforms could have on the two groups, we describe the overall direction of impacts and, where possible, provide indicative estimates of the proportions of active considerers and inactive consumers who could benefit.

A12.5 We have focused our analysis largely on active considerers because their decision to stay with their provider instead of switching may be affected by switching costs. Some of these consumers stay with their provider because the alternative provider's deal is not attractive enough, potentially due to high perceived switching costs. Others consider switching, but accept a better deal from their current provider, but their decision to accept or reject a save offer may also depend on expected switching costs. In both cases, as we show in more detail below, consumers may benefit from the reduction in switching costs that our reforms could lead to.

A12.6 The remainder of this annex presents:

- our approach to assessing the potential impact of our reforms on would-be switchers; and
- our estimate of the potential number of would-be switchers affected by our reforms.

[189] BDRC 2015 Quantitative Study referred to "inactive consumers" as "non-switchers/non-considerers". The results from the study are available here: https://www.ofcom.org.uk/research-and-data/telecoms-research/mobile-switching

Our approach to assessing the potential impact of our reforms on would-be switchers

A12.7 In our assessment of benefits,[190] we concluded that our reforms will reduce barriers to switching by addressing the time it can take and the unnecessary difficulties that can be involved in switching; and by eliminating double-paying by PAC and some C&R switchers.

A12.8 We expect reducing barriers to switching will deliver benefits to some would-be switchers over and above the benefits to switchers. This is because the reforms might i) lead some consumers, in particular those who actively consider switching, to change their behaviour; and ii) encourage competition between providers.

Active considerers

A12.9 We have identified the potential impact of our reforms on active considerers (as defined under the BDRC 2015 Quantitative Study)[191] by investigating the reasons why they stay with their provider under the current switching process. Based on this analysis we have distinguished between two different groups of active considerers:

- those who stay with their provider because they accept a save offer;[192] and
- those who stay with their provider for reasons unconnected with a save offer.[193]

A12.10 Figure A12.1 below sets out our view as to how active considerers in these two different groups might be affected by the reforms and in doing so, identifies four sub-groups (A – D) of active considerers.

[190] See Section 5, §5.7 to §5.85.
[191] BDRC 2015 Quantitative study defines active considerers as the group of mobile users who considered changing provider and actively started looking for one but decided not to change provider in the last 12 months.
[192] By the term reactive save offers, we mean circumstances where the losing provider is able to accurately identify customers intending to switch, as a result of information they receive as part of the formal switching process, and to make them a counteroffer not to switch. The term does not refer to counteroffers requested by a consumer who explicitly contacts the losing provider with the purpose of obtaining a better offer. The term "save offers" includes this latter category as well as reactive save.
[193] This approach addresses [✂] argument that Ofcom did not account for the cost of some consumers losing out on reactive save offers as a consequence of removing the need to contact the losing provider as part of the switch. Source: Page [✂], [✂] response to January 2017 cost update.

Figure A12.1 Our approach to assessing the potential impact of our reforms on active considerers

Group based on reasons why active considerers stay with their provider under the current switching process (2015 BDCR Quantitative Study)	Sub-group based on how they might respond to the reform switching process	Potential impact of our reforms on active considerers
Group 1 Active considerers who stay with their provider because they accept a save offer.	**Sub-group A** We expect that a proportion of Group 1 will continue to get and accept a save offer if – even after our reforms – they continue contacting (or being contacted by) their provider.	**Potential impact 1 – Benefit** We expect these active considerers would benefit from our reforms via improved save offers. Providers are likely to improve their save offers because a reduction in switching costs would make a customer's threat of switching more credible and, in turn, would increase rivalry between providers.
	Sub-group B We expect that the remaining proportion of Group 1 will no longer get a save offer if – due to our reforms – they no longer contact (or are contacted by) their provider.	**Potential impact 2 – Benefit or Harm** It is unclear whether these active considerers will benefit from our reforms. We would expect our reforms to make these active considerers worse off if the deal they end up switching to (net of switching costs) is worse than the reactive save offer they could have received. On the other hand, our reforms would make these active considerers better off if, by no longer getting a reactive save offer, they i) decide to switch and ii) if the gains from switching (net of switching costs) exceed the gains they would have accrued from the (no longer received) reactive save offer.
Group 2 Active considerers who stay with their provider for reasons unconnected with a save offer.	**Sub-group C** We expect a proportion of Group 2 will decide to engage with their provider to switch and end up actually switching or getting a save offer, if our reforms address the barriers that prevented them from switching under the current switching process.	**Potential impact 3 – Benefit** We expect these active considerers will benefit from our reforms via the gains from switching (net of any switching costs), or, if they obtain and accept a save offer.
	Sub-group D We expect that the remaining proportion of Group 2 will continue to stay with their provider on their current tariff, given our reforms have not addressed the reasons why they opted to stay with their provider under the current switching process.	**Potential impact 4 – None** We expect our reforms will not make a difference to these active considerers.

Inactive consumers

A12.11 We have identified the potential impact of our reforms on inactive consumers (as defined under the BDRC 2015 Quantitative Study)[194] by investigating the main stated reasons why they stay with their provider or did not actively consider switching under the current switching process. Based on this analysis we have distinguished between two different groups of inactive consumers:

- those who are inactive because of reasons addressed by our reforms; and
- those who are inactive because of reasons not addressed by our reforms.

A12.12 Our analysis on inactive consumers is less comprehensive than that on active considerers. This reflects inactive consumers being significantly less familiar with the switching process which makes it harder to predict the potential impact of our reforms on inactive consumers than it is on active considerers.

A12.13 We now go on to explain how we have estimated the potential size of each of the sub-groups of active considerers and inactive consumers.

Our estimate of the potential number of would-be switchers affected by our reforms

Active considerers

A12.14 We now set out the methodology we have used to obtain indicative estimates of the proportion of active considerers in each of the four sub-groups identified in Figure A12.1. We have based our estimates on results from the BDRC 2015 Quantitative Study.[195]

A12.15 First, we estimated the proportion of active considerers who stayed with their provider because they accept a save offer (Group 1 in Figure A12.1) versus the proportion who stayed for any other reason (Group 2 in Figure A12.1) using the responses to question A16A of the study (i.e. “Which, if any, of the following were factors that made you decide to stay with your existing mobile provider?”).

- We categorised 61% of all active considerers as part of Group 1 because they indicated that “I negotiated/accepted a deal with my current provider” was a major or a minor factor in deciding to stay with their provider.[196]
- We categorised the remaining 39% of all active considerers as part of Group 2 because they indicated that negotiating/accepting a deal was not a major or minor factor in their decision to stay with their provider, which implies that they stayed with their provider for other reasons.

[194] The BDRC 2015 Quantitative Study defined inactive consumers (or non-switchers/non-considerers) as the group of mobile users who did not consider changing provider or who considered changing provider but did not start looking for one in the last 12 months.
[195] The results from the BDRC 2015 Quantitative Study are available here: https://www.ofcom.org.uk/research-and-data/telecoms-research/mobile-switching
[196] The survey did not contain a direct question “did you accept a save offer”. Therefore, we assumed that all respondents who mentioned that a save offer was a factor in their decision to stay (whether major or minor), accepted such an offer.

A12.16 Next, we estimated the proportion of Group 1 that we expect would continue to contact (or be contacted by) the losing provider after the reforms and continue to receive and accept a save offer (Sub-group A in Figure A12.1). Our estimate is based on the responses to question C1 of the survey (i.e. "When you were thinking about switching did you contact your current provider for any of the following reasons?").

- Out of the 61% of all active considerers in Group 1, we have categorised 54% of all active considerers as part of Sub-group A because they indicated they contacted their provider for reasons that seem likely to be valid for active considerers to contact their provider and induce a save offer.[197]

- We have categorised the remaining 7% of all active considerers as part of Sub-group B because they indicated they contacted their provider for reasons that seem unlikely to be valid for active considerers to contact their provider after we introduce our reforms.[198, 199]

A12.17 Finally, we have estimated the proportion of Group 2[200] that we expect will decide to engage with their provider to switch and end up actually switching or getting a save offer after our reforms (Group C in Figure A12.1). Our estimate is based on the responses to questions A16A (i.e. "Which, if any, of the following were factors that made you decide to stay with your existing mobile provider?") and A16B (i.e. "And which of these was the main factor that made you decide to stay with your existing mobile provider…?").

- Out of the 39% of all active considerers in Group 2, we have categorised 3% of all active considerers as part of Sub-group C because they indicated the main factor that made them decide to stay with their existing mobile provider was something that is likely to be addressed by our reforms.[201]

[197] The list of reasons to contact providers that seem likely to be valid for active considerers to contact their provider after our reforms are: "To find out what I needed to do to change provider"; "To negotiate a better deal with my current provider'; "To find out about any charges for ending my contract early"; "To obtain information about my contract e.g. my usage patterns/spend"; "To find out when my contact ended'; and "Other".

[198] The list of reasons to contact providers that seem unlikely to be valid for active considerers to contact their provider after our reforms are: "To cancel my service/give notice"; "To arrange the 'stop date' in order to avoid a break in service"; "To arrange the 'stop date' in order to avoid paying both providers at the same time"; and "To obtain a code to give to my new provider (PAC)".

[199] There is obviously some uncertainty regarding which reasons for contact may be affected by our reforms. It may be claimed that some aspects of our reforms will lead to fewer people contacting their provider to learn what ETCs may apply, what they need to change provider, and when their contract ends. If we add these reasons of contact to the list of reasons that seem unlikely to be valid for active considerers to contact their losing provider (and therefore, not hear a reactive save offer), then the size of sub-group B rises to 18% of all active considerers.

[200] Active considerers who stay with their provider for reasons other than accepting a save offer.

[201] The list of factors that, we assume, are likely to be addressed by our reforms include three factors addressed by Auto-Switch and GPL (i.e. "It's too time consuming to go through the process of switching from one provider to another"; "Difficulty when contacting my current provider"; and "I had difficulty getting the code I needed from my current provider (i.e. the PAC)"); and a factor addressed by prohibiting charging for notice after the switching date (i.e. "I was worried I might have to pay two providers at the same time").

- We have categorised the remaining 36% of all active considerers as part of Sub-group D because they indicated the main factor that made them decide to stay with their provider was something our reforms seem unlikely to address.[202]

A12.18 Given that there are approximately 1.9 million active considerers per year,[203] we estimate that:

- Sub-group A could consist of 1 million active considerers per year (i.e. 1.9 million active considerers per year * 54% active considerers in Sub-group A) who are likely to benefit from a better save offer;

- Sub-group B could consist of 0.1 million active considerers per year (i.e. 1.9 million * 7% active considerers in Sub-group B) who might be better or worse off;

- Sub-group C could consist of 0.05 million active considerers per year (i.e. 1.9 million * 3% active considerers in Sub-group C) who are likely to benefit from either a better save offer from their existing provider or who might go on and switch to a better offer; and

- Sub-group D could consist of 0.7 million active considerers per year (i.e. 1.9 million * 36% active considerers in Sub-group D) who are likely to be unaffected by the reforms.

A12.19 We acknowledge that these estimates depend heavily on the assumptions made in estimating the proportion of active considerers in each of the groups described in Figure A12.1. More specifically:

- whether we use “major”, “minor”, “major and minor” or “main” reasons to estimate Group 1, i.e. the proportion of active considerers who stay with their provider under the current switching process because they negotiate/accept a save offer and who could receive an improved save offer after the reforms, if they still call or receive a call from their provider; and

- whether we use “major”, “minor”, “major and minor”, or “main” reasons to estimate Sub-group C, i.e. the proportion of active considerers who could switch after we introduce our reforms. It may be argued, for example, that counting only those consumers who said a process-related reason was the main reason in their decision not to switch is too restrictive, and that at least some consumers for

[202] The list of factors that, we assume, are unlikely be addressed by our reforms are: “Lack of choice”; “Not knowing what to do to switch”; “Worried service wouldn’t be as good with new provider”; “There wasn’t enough difference in cost to be worth switching”; “I was still in a contract so couldn’t leave/would need to pay to leave”; “Hassle to set up a new online account”; “I was worried I might not be able to use my mobile during the switch”; “Didn't want to lose the content stored in the cloud service provided by my existing provider (e.g. O2 cloud service NOT iCloud)”; “Didn’t want to lose friends and family or other call discounts”; “Handset is locked to current network and I don’t want a new handset”; “Did not want to change my mobile number”; “Current provider is still the best deal/cheapest”; “Current provider has the best quality of service (e.g. network coverage)”; “Would take too long to research the market”; “Difficulty comparing what other providers were offering”; “Didn't want to pay the upfront cost of the new handset”; “Prefer to stay with trusted/ known provider”; “Problems/ issues with current provider are not sufficiently bad/ frequent to switch”; “Bad experience switching my mobile provider previously”; “Bad experience switching other services previously”; and “Better handsets available with my current network/ didn't see any other handsets I liked”.

[203] Ofcom Switching Tracker 2015 reported 4% of mobile consumers were classified as ‘actively considered but did not switch’ – this equates c. 1.9 million mobile consumers.

whom process-related reasons were among major reasons (but not main) to stay, would switch in the future if our reforms helped to make the switching process easier.

A12.20 We have therefore performed a sensitivity analysis to demonstrate how our estimates change if we flex some of these assumptions. Figure A12.2 presents the figures from our base case scenario (Scenario A) alongside Scenario B because both scenarios produce the same groups of active considerers presented in Figure A12.1 above; Figure A12.3 presents Scenario C separately as it produces a slightly different set of groups of active considerers compared to Scenarios A and B.

A12.21 Scenario B continues to allocate active considerers into Group 1 on the basis of whether receiving a save offer was a major or minor reason for staying with their existing provider. However, it shows how the proportion of active considerers who could go on and switch (Sub-group C) and the proportion of active considerers who could be unaffected by our reforms (Sub-group D) change if we use "major" (rather than "main") responses as the basis for allocating Group 2 active considerers. In this scenario, we suggest that out of Group 2, consumers who stated that process-related reasons were among major reasons (as opposed to a single main reason) for staying, are those most likely to switch (i.e. Sub-group C) after our reforms.

Figure A12.2 Groups of active considerers in Base Case (Scenario A) and Scenario B

Sub-groups	Base Case (Scenario A) – size of the sub-groups (% of all active considerers) and responses used to estimate impacts[204]	Scenario B – size of the sub-groups (% of all active considerers) and responses used to estimate impacts
Sub-group A (i.e. active considerers who stay with their provider due to a save offer under the current switching process; and could receive an improved save offer after our reforms)	54% Based on "major" or "minor" responses	54% Based on "major" or "minor" responses
Sub-group B (i.e. active considerers who stay with their provider due to a reactive save offer under the current switching process; and who may be better off or worse off after our reforms)	7% Based on "major" or "minor" responses	7% Based on "major" or "minor" responses
Sub-group C (i.e. active considerers who stay with their provider due to any reason other than a save offer under the current switching process; and could switch or obtain and accept a save offer after our reforms)	**3%** Based on "main" responses	**13%** Based on "major" responses
Sub-group D (i.e. active considerers who stay with their provider due to any reason other than a save offer under the current switching process; and who will see no effect after our reforms)	**37%** Based on "main" responses	**26%** Based on "major" responses
Total better off (i.e. Sub-group A + Sub-group C)	**57%** (1.1m consumers per year)	**67%** (1.3m consumers per year)

[204] These proportions add up to 101% due to rounding.

A12.22 Scenario C allocates active considerers into five groups depending on which set of reasons were listed as “major” reasons to stay with a provider. The main difference from Scenarios A and B is that here we allow for several reasons to play a major part in a consumer’s decision, which leads to a larger number of sub-groups because reasons may now “overlap”.

A12.23 Some consumers stayed with their provider and a save offer was among the major reasons for their decision, but not any process-related reasons. Similarly, others stayed with their provider for process-related reasons and cited them as “major”, but a save offer was not among the major reasons they cited. For other consumers both a save offer and process-related reasons were important in their decision to stay.

A12.24 In Scenario C we do not specify what exactly will happen to the latter group, precisely due to the multiplicity of their set of major reasons to stay and how they relate to each other; they might switch to a different provider in the future, but they also might stay if they receive an attractive save offer. In either case, we believe that this sub-group will be better off. Similar to scenarios A and B, there is a small proportion of consumers who may no longer receive a reactive save offer in the future (Sub-group C), and the effect on this group is ambiguous.

Figure A12.3 Groups of active considerers in Scenario C

Sub-groups[205]	Scenario C – size of the sub-groups (% of all active considerers) and potential effect on them
Sub-group A (i.e. active considerers for whom a save offer was among major reasons to stay, process-related reasons were not among major reasons, and who will keep contacting their provider after our reforms)	22% Likely effect on this group is that they will be better off because they receive a better save offer in the future.
Sub-group B (i.e. active considerers for whom a save offer was among major reasons to stay and process-related reasons were also among major reasons, and who will keep contacting their provider after our reforms)	12% Likely effect on this group is that they will be better off either because they receive a better save offer in the future, or because they will switch to a better deal.
Sub-group C (i.e. active considerers for whom a reactive save offer was among major reasons to stay, but who will not contact their provider after our reforms, and will not receive a reactive save offer in the future)	6% Likely effect is unclear. This group may be better or worse off.
Sub-group D (i.e. active considerers for whom a save offer was not among major reasons to stay, and process-related reasons were among major reasons to stay)	21% Likely effect on this group is that they will be better off either because they will switch to a better deal, or because they receive an attractive save offer in the future and decide to stay.
Sub-group E (i.e. active considerers for whom neither a save offer nor process-related reasons were among major reasons to stay)	39% This sub-group will not be affected by our reforms.
Total better off (i.e. Sub-group A + Sub-group B + Sub-group D)	55% (1m consumers per year)

[205] The different groups of active considerers in Scenario C cannot be directly compared to those in the base case (Scenario A) and Scenario B as the use of only "major" reasons leads to a further breakdown of the groups, as explained in §A12.20.

A12.25 The main takeaway from the sensitivity analysis is that, across the three scenarios analysed, the proportion of active considerers who are likely to be better off (between 55% and 67%) is significantly higher than the proportion of active considerers who could be potentially worse off by our reforms (between 6% and 7%). It is also important to reiterate that the effect of our reforms on the latter group is ambiguous, and we cannot say with certainty whether they will be better off or worse off.

Inactive consumers

A12.26 We estimated the proportion of inactive consumers who are inactive because of reasons that our reforms are likely to address versus the proportion who are inactive for any other reasons, by using the responses to question A17A (i.e. "Which, if any, of these are factors why you have not recently switched or actively considered switching your current mobile network provider to another provider?"); and question A17B (i.e. "And which of these was the main factor why you have not switched or actively considered switching your current mobile network provider to another provider…?) of the BDRC 2015 Quantitative Study.

A12.27 For inactive consumers, we consider a conservative approach to analysis (i.e. focusing on "main" rather than "major" and/or "minor" responses) is appropriate as their lack of engagement in the market means they may not have responded to the BDRC 2015 Quantitative Study on an informed basis.

A12.28 Five percent of all inactive consumers indicated the "main" reason why they are inactive was something that is likely to be addressed by our reforms.[206] We are of the view that it is possible that this group of inactive consumers could benefit from our reforms by becoming switchers (or actively considering switching and then receiving a save offer). The remaining 95% of all inactive consumers indicated the "main" reason why they are inactive was something that our reforms would seem unlikely to address.[207]

A12.29 However, if the "excessive" time it takes to go through the switching process is not fully addressed by our reforms because it includes search time/hassle for these respondents, then the reason "It's too time consuming to go through the process of switching from one provider to another" would not be part of the list of factors

[206] The list of reasons to be inactive that seem likely to be addressed by our reforms are: "It's too time consuming to go through the process of switching from one provider to another"; "Concerned about paying two providers at the same time"; and "Too much hassle to cancel my current service"

[207] The list of reasons to be inactive that seem unlikely to be addressed by our reforms are: "Lack of choice"; "Worried service wouldn't be as good with new provider"; "There's not enough difference in cost to be worth switching"; "Don't know how to change provider/ switch"; "No other provider has reception/ coverage in my area"; "Need to wait until the end of my contract/ until I can switch without paying a penalty"; "Don't want to go through the hassle of setting up a new online account"; "Concerned about having no service while switching to another provider"; "Don't want to lose friends and family or other call discounts"; "Did not want to lose my phone number"; "Current provider is still the best deal/ cheapest"; "Prefer to stay with trusted/ known provider"; "Problems/ issues with current provider are not sufficiently bad/ frequent to switch"; "It's too time-consuming to find a better deal"; "It's difficult to compare the services available from different providers"; "Just haven't had time/ haven't got around to it yet"; "Bad experience when switching my mobile provider previously"; "Bad experience switching other services previously"; "Current provider has the best quality of service (e.g. network coverage)"; "Better handsets available with my current network/ didn't see any other handsets I liked"; "Didn't want to pay the upfront cost of the new handset and don't want a new handset"; "Handset is locked to current network"; and "Any other factors".

addressed by our reforms. Therefore, the proportion of inactive consumers that could benefit from our reforms by becoming switchers (or actively considering switching and then receiving a save offer) would fall from 5% to 3%, and the remaining group of inactive consumers who would be unaffected by our reforms would increase from 95% to 97%.

A12.30 Given that there are approximately 39 million inactive consumers per year,[208] we estimate that between 1.2-2 million inactive consumers (i.e. 3-5%) could benefit from our reforms by becoming active considerers or switchers and that the remaining 37.8-37.1 million (i.e. 97-95%) could be unaffected by our reforms.

[208] Ofcom Switching Tracker data 2015.